

ONE OF A SERIES OF REPORTS ON LIFELONG LEARNING

USING INSTRUCTIONAL MEDIA
BEYOND CAMPUS

CALIFORNIA
POSTSECONDARY
EDUCATION
COMMISSION

USING INSTRUCTIONAL MEDIA BEYOND CAMPUS IN CALIFORNIA POSTSECONDARY EDUCATION

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SUMMARY AND FINDINGS

Formal learning at several different levels above the twelfth grade is occurring in California beyond campus, often beyond classrooms, with the help of electronic instructional media. Surveys have shown overwhelming acceptance by those who utilize these modes of remote instruction. Much of this mediated instruction is demonstrably economical. This is clear and unequivocal. From a statewide perspective, however, mediated instruction is not yet evenly or equitably available to all Californians. There are great differences by geographical region; there also are differences in availability according to the level or type of instructional need. There is well organized outreach of continuing education to the work places of attorneys and physicians, for example, but no media effort to reach adults needing to improve their English reading or writing skills. Yet California has most of the needed hardware and talent with which it could fashion an equitable system of instructional help for those who cannot commute regularly to classrooms.

The chief findings of this study include the following:

1. Largely through the work of consortia of colleges and universities, over 50,000 Californians enroll each year in broadcast telecourses for academic credit; well over 60,000 utilize video-and audio-cassettes for continuing professional education beyond the classroom, including attorneys and registered nurses. Increasingly, other "linkages" are providing people with formal learning opportunities in other-than-classroom modes: Instructional Television Fixed Systems (ITFS) linking the campus with offices, learning centers, hospitals, and homes; newspaper lecture series; and radio broadcasts. While other media also are being explored, these have been used repeatedly over several years by professionals to remain competent and competitive. Furthermore, these newer modes of learning have enrolled additional thousands who would not have enrolled in regular campus classroom courses.
2. Remote mediated learning, combined with appropriate contact with live instructors and peers, can be at least as effective and significantly less costly per unit than traditional classroom lecture modes.
3. With appropriate uses of electronic media and the capacity to use tapes for repetition, "mastery learning" is more readily attainable.
4. Open broadcast is not necessarily the most efficient or effective way to distribute instruction beyond the campus/classroom.

It depends on the nature of the intended audience. When it is used for undergraduates, however, polls indicate that from ten to twenty viewers tune in to the televised part of the course for every individual who enrolls for credit. Instructors and students are overcoming the "isolation" problem.

5. Public Broadcast television stations cannot be looked to for sustained or expanded broadcast of college-level instruction on a statewide basis. Only half the California stations are owned by educational institutions, and the California Public Broadcasting Commission is mandated to help only Public Broadcast stations
6. Not all regions of California presently have significant amounts of mediated instruction at the undergraduate level. There is great inequity by geographical location in the number and types of courses available by broadcast. In most regions there is little or no postsecondary instruction in Spanish or other foreign languages
7. There is great variation by academic field in the availability of remote instruction, teachers, engineers, physicians and attorneys presently seem to be chief beneficiaries of media for in-service education. At the college entry level, there are many attractive telecourses, but none to encourage further effort by those deficient in English and math skills for college. There is almost no remote instruction for those not fluent in English.
8. Since the senior universities and colleges (UC and CSUC) can offer mediated instruction beyond campus only via Extension, they must charge full-cost fees even for upper division courses taught by regular faculty. Community colleges, on the other hand, offer lower division telecourses for no or low fees. This very wide gap in student costs effectively prevents the senior institutions from committing themselves to developing mediated instruction for the upper division curriculum beyond the campus/classroom.
9. Public colleges/universities generally are reimbursed on the basis of enrollments and/or attendance through a portion of the course, not for completing it or mastering its content. There is no economic reward for efficiency. Budget formulae for State support to postsecondary education, on the other hand, could be devised to provide incentives for educators to find the most expeditious ways for students to achieve learning objectives, including the use of various electronic media for those beyond the campus. Such incentives do not now exist.

10. Some experience indicates that appropriate uses of electronic media for instruction--both off-campus and on-campus--can help in cutting the course drop rate. For most part-time students, the relevant unit of accomplishment is not the year or semester but the individual course. Thus, to "increase persistence" now means to increase the completion rate, course by course. More research on this is warranted.
11. One idea which nearly all practitioners in the field of instructional media greet favorably is that of a State-level conference in 1979 to give legislators and faculty leaders a current view of what is attainable in learning with proper uses and combinations of electronic media
12. With few exceptions, colleges have selected courses for broadcast on a "marketing model" (what will attract the most new viewers to enroll) rather than a "curriculum model" (what sequences or blocks of courses will provide the most help to citizens who cannot commute to campus) Broadcast offerings thus have an ad hoc character
13. There is no official process or mechanism for intersegmental, statewide planning, coordinating, developing and using of remote mediated instruction in California. There is much activity of high quality in certain regions of the State; leading practitioners from all segments of education have maintained active liaison through their own informal committee, the California Educational Telecommunications Committee.
14. The three public segments of higher education have much hardware and talent for developing effective and efficient vehicles for enabling Californians to continue their formal education on a part-time basis. It would require relatively small amounts of support, planning, and State-level coordination for them to attain the kinds of economic and learning gains now feasible with electronic learning media.
15. An important first step toward more concerted, statewide use of available media for postsecondary instruction - especially beyond campus - could be taken by the California Postsecondary Education Commission's convening an intersegmental planning task force of experts similar to the membership of the California Educational Telecommunications Committee.

INTRODUCTION

A human being should not be wasted in doing what forty sheets of paper or two phonographs can do. Just because personal teaching is precious and can do what books and apparatus cannot, it should be saved for its peculiar work. (Edward L. Thorndike, 1912)

With the vast repertoire of communications media available, it is high time instruction became more productive. If, as seems clear, some of the functions performed by human beings can be performed as well or better through other agencies, teachers could assume more versatile, differentiated, human roles in the schools. (Sidney Tickton, 1970)

For at least twenty years, Californians have talked about utilizing electronic communication media to bring instruction to the people rather than the other way around. Meanwhile, vast expenditures of public funds provided conventional classrooms within commuting distance of most Californians. Uses of electronic media tended to remain confined within this conventional pattern of classrooms and campuses. Since 1970, however, significant developments have revived thoughtful inquiry, at the State-policy level, about more concerted use of modern media for postsecondary instruction beyond the campus. These developments include:

1. Demand by taxpayers for more efficient use of public resources;
2. Emergence of multi-campus consortia and their experience in offering televised courses economically;
3. Growing sophistication in using media for coordinated instruction at adult levels;
4. Technical improvements in electronic communication media;
5. Increased requirements for continued learning and/or credit for maintaining professional standing;
6. A steady trend among Californians toward studying part-time and at different stages of adult life; and
7. A new awareness of our limited energy resources.

In view of such significant changes, the Legislature, in 1976 (AB 4325), directed the Commission to study, among other aspects of

continuing education, "the coordination within geographic regions of electronic media used for educational purposes." The directive grew out of concern for effective and equitable use of communication media for instruction beyond the campus. With coordinated uses of these media, could not adults with full-time jobs and family responsibilities--as well as those less mobile--still participate economically and effectively in organized learning?

This is, in part, a status report, Commission staff has surveyed the major uses currently being made of electronic media in California for instruction beyond the university/college--"remote" instruction. This report summarizes the findings of the survey. But what is currently happening need not determine entirely what can happen in the future. This report also suggests that, with more coordinated and selective uses of electronic media, certain levels of instruction could be achieved at less cost but with no less learning than by traditional modes. Finally, the report points to several directions for detailed examination--all toward making it possible for more Californians to avail themselves of quality instruction beyond the high school level--more, at any rate, than now can utilize the traditional campus-classroom-commuting routine. "More Californians" means people of several kinds. (a) some "regular" students find it possible to continue to attend college by combining a broadcast "TV course" or similar remote learning with other scheduled courses, thus enabling them to hold a job or tend their children at home, (b) for others, the TV course provides a new kind of encounter with excellent college instruction, and awakens new possibilities for further education; (c) for still others, the use of various "media" for studying at home or work place provides a practical way of keeping up with their profession or preparing for relicensure. This report is concerned with all these types of learners and with whether remote, mediated instruction is to be available to them equitably around the State 1/

Trend and Benefits

In general, growing numbers of people in California are attracted by the potential benefits of remote instruction by electronic media. In recent polls, for instance, four out of five enrollees in telecourses said they wanted to study again by that means. Potential benefits include

- . better access to instruction, for the less mobile--from the severely handicapped to the full-time worker with a family,
- . energy savings from less dependence on the automobile and the classroom;

- . alternative, less-costly methods for continuing professional education;
- . encounters with leading scholars and practitioners in various fields;
- . more opportunity for individual attention from the on-campus instructor,
- . opportunity for repetition (replay) of instruction, with less reliance on note taking and more chance of mastery learning;
- . the possibility of individualizing programs, thereby increasing student persistence,
- . a wider audience of "adjunct learners"--those who are not enrolled but follow the course and perhaps become interested in later activities of the institution; and
- . lower public cost per enrolled student.

Prior to the 1970s, research of widely varying quality indicated that no experimental measures can furnish "proof" that one set of communication media will invariably lead to learning effects superior to those attained with some other set. (There are always other variables than the media being compared.) Fortunately, such concerns did not keep our forebears from developing books and graphics, so those two media vastly increased our options about how, when, and where we learn. Similarly today, the State must make judgments about how best to utilize the several electronic means for continued learning beyond the classroom, whether to encourage and extend the available options without definite proof that these will guarantee better learning. The kind of gains which the "new" media can guarantee are expanded options--greatly increased choices about how, when, where and for whom formal learning is available, and at what cost.

In addition to the "user" benefits, it is already apparent that wider use of electronic media can substantially lower the cost to the public per student. Achieving the full benefits of media, however, requires the deliberate collaboration of people at several levels, statewide

Scope of the Study

This study confined its inquiry to credit instruction sponsored by California colleges and universities. It is a commonplace that businesses, industries, and certain professions make regular use of

electronic media (although not open circuit broadcast) to keep informed about new developments, to provide in-service training, and to "meet and confer" about new information pertinent to their work. But what is the current usage of these media by educational institutions for reaching beyond the campus and classroom? First, how broadly available, in a geographical sense, is remote, mediated instruction beyond the high school level? And, second, how consistently is such instruction available--i.e., how consistently can Californians with varying educational needs turn to mediated instruction--broadcast TV and radio, for instance--for help?

Further, while computers hold promise of expanded uses in the future, their present use for instruction occurs on campuses, and thus did not fall within the scope of this study. Finally, the predominant attention given in the survey to broadcast telecourses must not obscure the study's overall interest in other combinations of media which, at present, are not as prominent.

Definitions

A live, talking instructor moving around a classroom and writing on a blackboard utilizes at least three media of communication--here, instructional media. Books add yet a fourth medium, and when the student takes a book home the formal learning process moves beyond the classroom. It is just such possibilities for "remote instruction" which modern electronic media enable people to expand or multiply. Part of the educative art, whatever media are chosen, always has to do with the deliberate combining of various available media for optimal learning effects. When the combinations include substantial sequences of instruction beyond the classroom and away from the instructor, with the aid of tested technologies, they begin to fit the definition of "coordinated instructional systems," C I S. 2/ As elementary as all this may sound, a great many people in California, including educators, still lack firsthand familiarity with coordinating available media for teaching and learning at the college level.

Today's telecourse in California usually is such a coordinated system as just described, although not the only kind. First, not one lone teacher but a team of teachers, subject-matter specialists (who may not be teachers), and media experts outlines the course to be taught. The video presentation usually is taped, and can be edited, replayed, and copied. When the presentation is not taped but broadcast "live," the intent is usually to provide an interactive capability, i.e., opportunity for a viewer to talk back or put questions to the person(s) on the screen. Other components of a telecourse system commonly include:

- . one or more textbooks, selected or written for each academic level which uses the video component;
 - . a printed study guide, to help the student viewer grasp the presentations;
 - . on-camera teacher(s), sometimes with a panel of experts as in the series, "Environmental Impact Reporting and Evaluation";
 - . a local on-campus instructor/mentor, to help the student individually via office appointment, telephone and letter, as well as to administer examinations;
 - . tutorials and written papers, and
- videotape copies of the course, for reviewing at times scheduled by student (e.g. in a library)

Unlike the typical classroom lecture/discussion course, the typical taped telecourse undergoes critique by professional peers and possibly further editing after its first use. Individual modules (or broadcast programs) can be replaced or brought up to date. Some program modules are designed for use at two or three levels of instruction; for example, for both dentists and dental technicians, or for teachers and parents of beginning readers.

Not all of the features listed above are part of every telecourse, but all are typical of current practice in California. Using electronic media for remote instruction in this decade thus differs markedly from the "closed circuit lecture hall" of the 1960s.

MAJOR COMBINATIONS OF MEDIA IN USE FOR REMOTE INSTRUCTION

California institutions of postsecondary education use varying combinations of media for remote instruction. Few of these can be said, at present, to cover the whole State, but all provide a reach beyond the campus/classroom

Instructional Television Fixed Service (ITFS)

Instructional Television Fixed Service (ITFS) is, "in effect, a closed-circuit delivery system using the airwaves to interconnect a central transmitting point with one or more designated receiving points . . . It cannot reach the public outside of specified receiving points such as classrooms or learning centers." 3/

In an important sense, ITFS permits an institution to transmit its on-campus classroom to other, off-campus classrooms. In sparsely populated northeastern California, for example, one or more persons can participate in a class at the Chico campus by going to one of six "Regional Learning Centers" (RLC) located in various communities in the area; each RLC has a classroom equipped to receive the ITFS signal. The student can respond "live" to the professor by telephone. Since the educational institution and faculty retain control over the whole situation, including the broadcast and who can watch it, the educators need feel little constraint to adapt their classroom teaching either to a new medium or to a different potential clientele. Indeed, one Chico professor has stated that "every effort is made to encourage faculty to treat an ITFS-delivered course in the same way (or nearly so) as a non-ITFS course." This helps to resolve two problems: faculty participate more readily, and the institution extends its outreach. It also avoids the expenditure of time, planning and coordinating required for taped telecourses.

From Fall 1975 through Fall 1978 (eleven terms, including summer), the Chico campus initiated sixty-one courses over its ITFS system, although "some were cancelled after the first meeting . . . and some were cancelled beforehand"

It is reported that people with special needs who live within an ITFS area can rent a small unit that can unscramble the signal for reception by their home TV set. Those who are physically unable to commute to their nearest Regional Learning Center could thus be enfranchised to "attend class" by this medium. In practice, however, this capability has hardly been utilized.

The combination of ITFS with microwave links also joins the Davis campus of the University with the Lawrence Laboratories at Livermore and several State buildings in Sacramento. In California overall, eleven hospitals are linked by ITFS with university campuses. Stanford University's School of Engineering uses a four-channel ITFS system with a "talk-back" capability, to convey instruction to more than thirty private firms located on the San Francisco Peninsula. With three other universities, this "Stanford network" enrolled over 3,600 students during a recent twelve-month period. San Diego State University also is developing a video link between its main campus and the adjunct campus at Calexico.

A staff member of KPBS (the State University-owned station, TV and FM) recently received a training grant from the Corporation for Public Broadcasting, and will direct a new Educational and Special Services Office within KPBS. She will "develop ways to serve special groups in San Diego by the transmission of educational programs from the SDSU campus to specific locations." ^{4/} The deaf are one group appropriate for new uses of ITFS, the blind have already begun to receive educational radio programs.

There are approximately eight ITFS systems operated by higher education institutions in California. The several ITFS "networks" in the State operate rather independently from one another, although the number of channels available for this service is quite limited.

One important technical addition possible is to use an ITFS to feed instructional programming into cable systems for "home delivery." This offers a way to expand significantly the potential channels and audience of ITFS.

The Quimby-Crabbe report of December 1974 recommended to the Legislature "that steps . . . be taken by the State to support further development of ITFS systems and to coordinate its development to ensure that this resource will be used efficiently and fully " 5/

Courses by Radio

Courses by radio in 1977-78 took at least two interesting turns. Station KPBS-FM in San Diego broadcast two complete courses--one in political science, another in sociology--for the severely handicapped. Each series consisted of thirty programs of fifty minutes each. This station, using a specially-designated subchannel, also airs a full weekly schedule of programming for the physically disabled, including readings of newspapers, fiction, and non-fiction. A special receiver is required for this service but anyone within the broadcast area may apply for the use of such a receiver. KPBS-FM, on the campus of San Diego State University, is exploring with San Francisco State University the possibilities of airing this service in northern California in the future.

Station KERS-FM (at California State University, Sacramento) also aired, in 1977-78, a credit course 6/ The broadcasts, some twenty or thirty minutes each, provided a Survey of Communication Studies. As with the KPBS-FM radio project, this project may be shared with other noncommercial radio stations elsewhere in the State.

Station KVCN-FM (San Bernardino) provided a third type of instructional radio. In 1976-77 this station provided strategic support for the ITV course in music appreciation, "From Chant to Chance," offered for credit by San Bernardino Valley College. The public FM station broadcast ten programs of sixty minutes each (airing each program twice) which provided high fidelity sound back-up for the music course.

In view of the relatively low cost involved, instructional radio would seem to warrant further development and attention, with obvious advantages for the teaching/learning of languages.

Courses by Newspaper

Since 1973 University Extension, University of California at San Diego, has been providing college-level courses which utilize one or more of the mass media--newspapers, television, radio--as the essential vehicle of instruction in place of the classroom. These "national media courses" are developed as educational packages including textbooks, anthologies of additional readings, and study guides written by leading scholars. To date, some 850 two- and four-year institutions have offered one or more of these courses, representing over twenty-five percent of the total number of accredited institutions in the U.S.

Courses by Newspaper, funded by a grant from the National Endowment for the Humanities, have included: "Death and Dying in America" and "Taxation" (Fall 1978), "Popular Culture: A Mirror of Our Times;" "Oceans: Our Continuing Frontier" (Spring 1978); also, "The Future of Man" and "American Issues Forum "

The central presentations, in Courses by Newspaper, appear as sequential articles in newspapers. Other publications are available through college bookstores to provide additional learning resources. Generally, course instructors meet with enrolled students for two contact sessions, as well as administer an objective examination. To date, over 500 newspapers have participated in CBN courses, printing articles available to them through United Press International and prepared by some of the most knowledgeable scholars from the U.S. and abroad. Readership of the articles may number five to seven million, but students who enroll in the courses for credit range from six to twelve thousand.*

Instructional Tapes

Simply distributing instructional tapes, by mail or other means, provides another important model of "media" instruction. California attorneys have done this for eight years.

* Another category of UCSD's National Media Courses, COURSES FROM TELEVISION, takes advantage of the appearance on public television throughout the U.S. of television series designed for entertainment but with useful educational content. Many of these series are produced by the British Broadcasting Corporation. Among these are "Ascent of Man"; "Classic Theater"; "Age of Uncertainty"; and "Shakespeare." American productions of similar quality are "Adams Chronicles" and the forthcoming "Man in the Cosmos." These series are seen by as many as 3.5 million viewers, and college and university enrollments range from twelve to fifty thousand. Typically, 400 to 500 institutions offer these courses.

Continuing Education of the Bar (CEB), describes itself as

a non-profit organization established by the State Bar of California . . . entirely self-supporting . . . (and for the) continuing education of the members of the Bar of the State of California . . . 7/

Structurally, it is administered under the University of California Extension

CEB provides statewide coverage for continuing professional education unique in California. Since 1971, CEB has produced videotapes as well as audiotapes, books, and printed supplements in carrying out its continuing educational mission. Its 1978 catalog lists forty-five videocassette titles and forty-four locations where attorneys may view these tapes. Many of the locations are private law offices, where CEB maintains a collection of its publications.

The videotapes are easily handled as 3/4" cassettes, and can be rented by individuals as well as viewed for fees at the designated locations.

Some of the tapes present highlights of recent CEB programs. These were recorded by cameras stationed in the audience and were then edited by CEB attorneys.

More than half were studio-produced by CEB expressly for taping. This includes "Developments" tapes, which annually cover new cases, statutes, and practice developments in various major subject areas.

CEB videotapes are not for sale. CEB cooperates with local bar groups to arrange showings. Payment is on a per viewer basis. Each attorney who views a CEB videotape pays the designated enrollment fee. Standard fees are \$7.00 for a one-hour tape, and \$14.00 for a two-hour presentation.

To minimize the need to take notes, each attorney who views a CEB videotape receives a printed syllabus listing the topics covered in the order that they appear on the tape, with the pertinent authorities.

(CEB Catalog, 1978, Berkeley)

Some sixty-thousand attorneys in California utilize this means of keeping up to date--for them that means remaining competitive as well as competent--in their profession. CEB had found that its lecture programs "were reaching only those lawyers who were located in or

near metropolitan centers," but can boast that, with assiduous production and distribution of videotaped instruction, "CEB is able to deliver programs of high quality at reasonable cost to all corners of our state." 7/ (Italics added.) Once exposed to the newest information and analyses, the attorneys can gather with others for discussion as they choose.

Uses of the "Tapes" Model

For an economical as well as flexible and convenient means of continuing one's professional education, CEB presents a highly adaptable model for other professions. The same concept has been adopted by Cosumnes River College, which developed a unique network of small-town locations for instructional tapes on consumer and retiree concerns (Telebrary).

Nurses, as one professional group, have made notable efforts in the direction of self-instructional materials. Associations and schools of nursing have demonstrated active interest in developing means whereby nurses might maintain their learning edge without commuting all over the countryside on off-duty hours. This is the type of profession--with practitioners in all areas of the State, impelled by the nature of their work to stay well-informed of new procedures and technical developments--that could benefit from a statewide coordinated effort to provide mediated instruction for the work place and home.

Furthermore, the University of California, San Francisco, as one "approved provider of continuing education for registered nurses," has already taken steps toward credit for in-service, individual study with the use of audio-visual modules. It recently sponsored a three-year project to inventory such materials. Doubtless other professions, too, could benefit from such economies of time as the CEB model suggests may be possible, but nursing in California may well have the most urgent needs of this nature.

BROADCAST TELEVISION BEYOND CAMPUS AND COLLEGE CLASSROOM

By far the largest enrollments and the most courses discussed in this report are those which place major reliance on broadcast television. While the telecourse certainly is not a child of this decade, significant refinements have evolved from California's experience with it since 1970, and its use has increased rapidly in the ensuing eight years.

By now, a majority of California's public postsecondary institutions make at least some use of broadcast TV for instruction. During the 1976-77 academic year, about 114 colleges and universities offered regular academic credit for at least one telecourse, a total of approximately 685 courses were offered in this way 8/, with an estimated peak enrollment of 53,000 students. Of these 114 institutions, however, some offered only one course. The most aggressive institution in utilizing TV offered 17 courses during the fall and spring terms.

Consortia for Remote Instruction

An overwhelming proportion of television courses are offered under the auspices of institutions pooling their resources in consortia, formally organized and staffed for just that purpose.

Since 1970, the formation of multi-campus consortia has enabled institutions to accommodate the cost and effort required to offer open-circuit broadcast instruction. Through joint-powers agreements, cooperating institutions began to lease and even produce various printed and video components of courses, as well as to air them over an area extending well beyond the "territory" of any single institution. Fitzgerald wrote about the community college experience in California, but his description also applies somewhat to universities in the 1970s.

Early experiences in courses by television in San Bernardino and San Mateo indicated that a single district experienced almost unsurmountable cost and quality problems. The ability to spread such costs by a number of districts joining together, the ability of securing commercial station time with the expectation of large numbers enrolling and watching, and yet allowing each college the freedom of accepting or rejecting any given offering proved to be levers leading to continued growth in college educational television.

(James Fitzgerald, in Community, Vol. I, No. 1, Jan. 1977, Calif. Community and Junior College Association.)

The consortium covering the greatest geographical area is the "California Instructional Television Consortium," composed of the nineteen campuses of the State University System. This Consortium has specialized in upper division and graduate/professional courses (continuing professional education) since its assignment was expanded in Fall 1973, to work with/for all the State University campuses, statewide.

In terms of total enrollments, the consortium providing the greatest coverage is one made up of over thirty community colleges in the State's most populous area. The Southern California Consortium for Community College Television includes member colleges from Santa Barbara in the north to Saddleback (Mission Viejo) in the south, and inland as far as Barstow. It covers, in general, the Greater Los Angeles and Orange County areas, plus adjoining territory.

Two different types of cooperative structures at opposite ends of the State have experimented with bringing Community Colleges and four-year institutions together to utilize common broadcast components for instruction at different academic levels. The Northeastern California Higher Education Council has been using various means, including broadcast media, to reach out to both the regular student and "the adult/resident in more physically remote areas whose education has been terminated or interrupted" (Annual Report, 1976-77, p. 1). The Council presently is comprised of six community colleges plus the University of California at Davis and California State University, Chico. The Council claims that "the combined service areas of the (6) community college members . . . spreads over 30,298 square miles, an area the size of the state of Ohio" (Annual Report, 1976-77, p. 1).

At the southern end of the State, the University of California at San Diego, San Diego State University, and the Coast Community College District carried out "Project Outreach," designed to make joint (and economical) use of modern communication systems emphasizing television.

Thus, cooperative experience has accrued through the decade. At present, seven multi-campus consortia are making active use of broadcast media for instruction (Table 1).

Individual Institutions

Consortia by no means account for all the broadcast instruction at the college level in California, however. Several individual institutions make significant use of the media. University of La Verne, in cooperation with Media V, Inc., has produced and distributed televised instruction for teachers for several years. Four community college districts offer ITV courses locally in addition to their consortial courses. The University of California at San Diego, through its continuing education office, has taken outstanding initiatives for reaching beyond its own campus with media.

TABLE I.
REGIONAL AND STATEWIDE CONSORTIA OF COLLEGES AND/OR UNIVERSITIES
FOR INSTRUCTIONAL TELEVISION (ITV) AND COURSES AIRED IN FALL 1976 - SPRING 1977^{1.}

	<u>Consortium</u>	No. Member Campuses	No. ITV Courses Aired		
			Fall 1976	Spring 1977	Total
1.	Southern California Consortium for Community College T.V.	33	4	6	10
2.	Bay Area Community College T.V. Consortium	25	3	4	7
3.	Television Consortium of Valley Colleges (Sacramento et al.)	8	4	4	8
4.	Committee on Instructional Telecommunications (San Diego)	6	7	7	14
5.	Central Valley ITV Consortium (Fresno et al.)	6	1	1	2
6.	Northeastern California Higher Education Council (Davis, Chico, et al.)	8	1	3	4
7.	California ITV Consortium (CSUC)	19 ^{2.}	7	7	14

1. Some course series offered in Fall were broadcast again in Spring, usually in different areas.

2. In Fall 1976 and Spring 1977, the California ITV Consortium reported 11 campuses offering credit for broadcast courses although it included all 19 CSUC campuses as consortium members since 1973.

Getting on the Air

To air the total number of courses broadcast in 1976-77 required air time of both commercial and public stations (Tables II and III). With significant exceptions, stations of the Public Broadcast System (PBS) charged their standard rates for air time for instructional programming. Commercial stations, on the other hand (at least the ones listed here), were able to offer free time. They aired almost one thousand hours of college course programming toward fulfillment of the federal requirement to provide free time as public service. Beyond such requirements, however, certain commercial stations in California also have done much to encourage the improvement of instructional television by donating significant amounts of staff time, technical assistance and facilities in producing the broadcast material. Maps A and B indicate the approximate geographical coverage of the State by PBS and commercial TV stations. For an indication of the additional capacity provided by cable television companies (CATV),--see Map C. (Cable companies were not surveyed for total amounts of instructional programming they may have carried. 9/) The point here is not to highlight ironic contrasts between the costs of broadcasting via "public" and "commercial." The point is that, for various reasons, the "educational stations"--PBS--do not come near to providing all the broadcasting time required for even the present amounts of postsecondary instructional TV in California. It seems clear that if colleges, universities and professional schools all were to make concerted efforts to extend instructional programming to all corners of California and to varied student groups at an optimal level, they could not do it by using only the Public Broadcasting System.

From Tables II and III, it can be seen that all television stations in California aired approximately 2,562 hours of college credit courses (not including replays) from fall through spring of 1976-77. But, when read in combination with the maps, the impressive aggregate totals of air time and number of courses available appear very unevenly distributed around the State. ITV at the postsecondary levels is most available, as a rule, where the most broadcast stations are located--in the most urbanized areas of the State. The TV viewer in Eureka, for example, had far less televised credit instruction available (1976-77) than did a viewer in the San Francisco Bay Area. In the Los Angeles basin, a viewer had four and one-half times more credit instruction to choose from that year than did the viewer in Fresno. These findings are not surprising, large metropolitan areas have a longstanding reputation as centers of educational and cultural resources. Yet that is perhaps one of the points to be made about the use of electronic media for instruction: the technologies for remote instruction now enable us to overcome that historic urban-rural difference.

TABLE II.

PUBLIC TELEVISION STATIONS IN CALIFORNIA¹.
WITH AMOUNTS OF POSTSECONDARY INSTRUCTION AIRED
DURING TWO SEMESTERS--FALL 1976 - SPRING 1977

Station	Location	No. Courses Aired		Hours of Broadcast (1st airing)		Total 2 Sem.
		Fall 76	Spr 77	Fall 76	Spring 77	
1. KOCE	Huntington Beach	8	7	120.5 hrs.	126.0 hrs.	246.5
2. KVCB	San Bernardino	5	7	84.0 hrs.	152.0 hrs.	236.0
3. KCSM	San Mateo	6	4	111.3 hrs.	79.5 hrs.	190.8
4. KQED	San Francisco	7	7	83.0 hrs.	94.5 hrs.	177.5
5. KCET	Los Angeles	5	6	81.0 hrs.	94.0 hrs.	175.0
6. KVIE	Sacramento	4	4	68.0 hrs.	68.5 hrs.	136.5
7. KTEH	San Jose	4	5	45.0 hrs.	57.5 hrs.	128.5
8. KPBS	San Diego	5	3	55.5 hrs.	53.0 hrs.	108.5
9. KLCS	Los Angeles	6	5	66.0 hrs.	32.0 hrs.	98.0
10. KIXE	Redding	3	2	38.0 hrs.	26.0 hrs.	64.0
11. KEET	Eureka	1	0	8.0 hrs.	0	8.0
12. KMTF	Fresno	0	0	(Began broadcasting April 1977)		0
						<u>1569.3</u>

1. I.e., licensed as part of the Public Broadcast System (television).

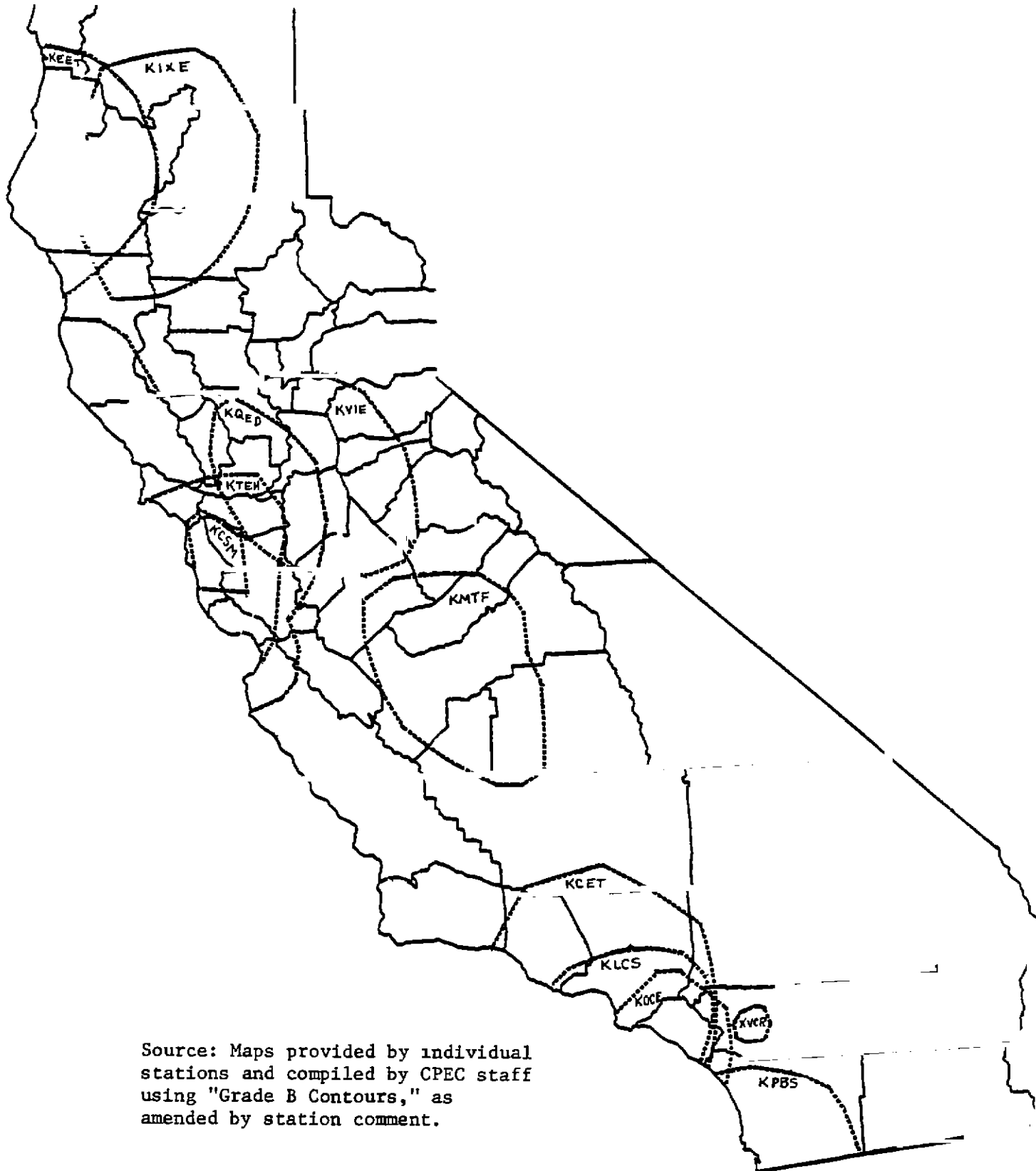
TABLE III.

COMMERCIAL TELEVISION STATIONS IN CALIFORNIA WHICH AIRED
POSTSECONDARY INSTRUCTION DURING TWO SELECTED SEMESTERS
FALL 1976 - SPRING 1977

Station	Location	No. Courses Aired		Hours of Broadcast (1st airing)		Total
		Fall 76	Spr 77	Fall 76	Spring 77	
1. KCRA	Sacramento	5	5	51.0	78.5	129.5
2. KGO	San Francisco	2	3	37.5	70.0	107.5
3. KGTU	San Diego	3	2	60.0	45.0	105.0
4. KRON	San Francisco	3	1	60.8	15.0	75.8
5. KABC	Los Angeles	2	2	37.5	37.5	75.0
6. KQVR	Stockton	3	3	38.5	33.0	71.5
7. KPIX	San Francisco	5	1	35.0	25.0	60.0
8. KFSN	Fresno	2	2	37.5	21.0	58.5
9. KRCR	Redding	3	3	24.5	33.0	57.5
10. KTTV	Los Angeles	2	2	28.5	28.5	57.0
11. KCST	San Diego	1	2	25.0	30.5	55.5
12. KNXT	Los Angeles	0	2	0	40.0	40.0
13. KHSL	Chico	1	1	22.5	15.0	37.5
14. KAIL	Fresno	2	3	11.5	24.0	35.5
15. KHJ	Los Angeles	1	1	6.5	6.5	13.0
16. KMJ	Fresno	0	1	0	8.0	8.0
17. KTVU	Oakland	0	1	0	6.5	6.5
						<hr/> 993.3

Map A

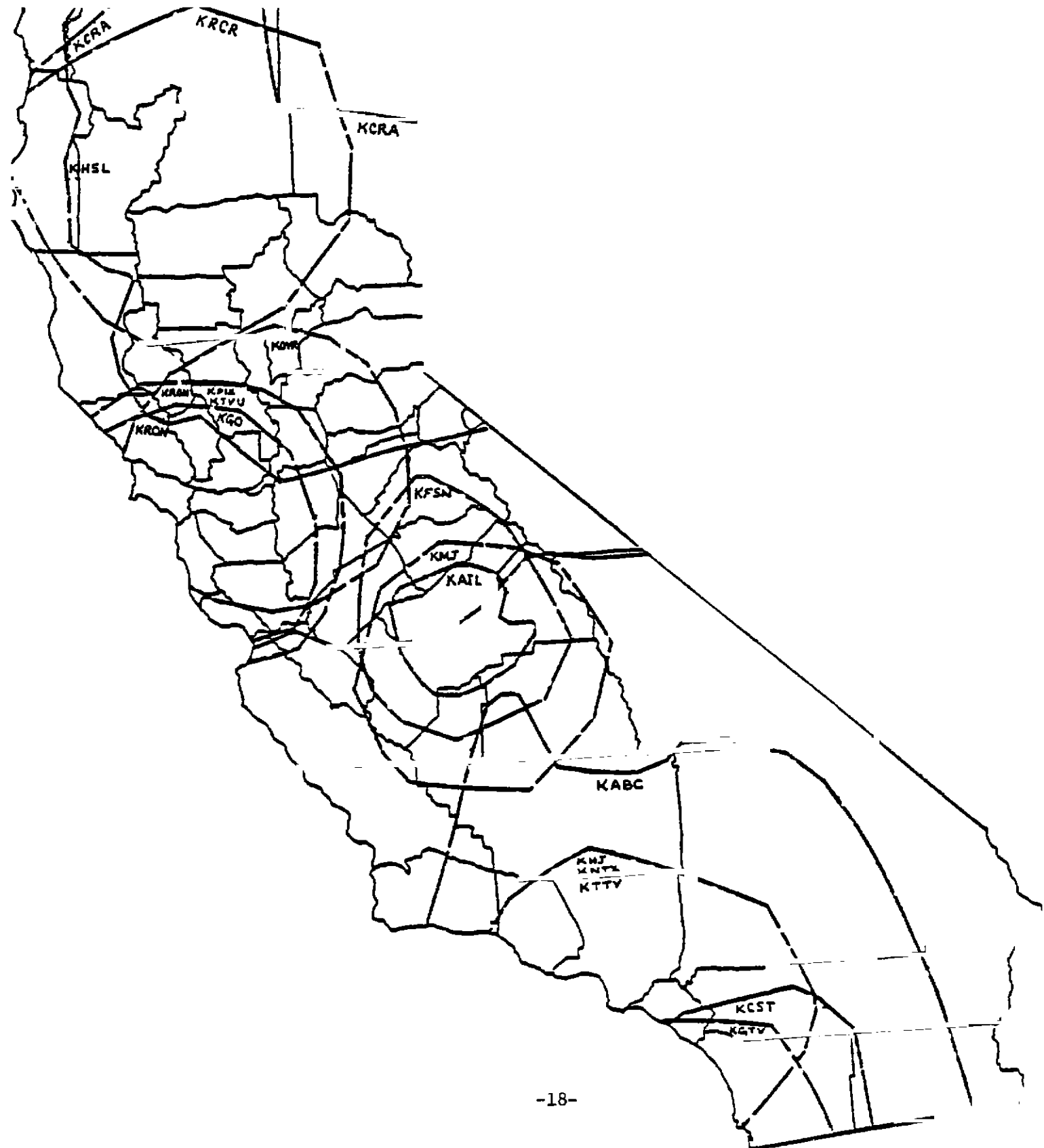
Approximate Broadcast Areas of Public Television
Stations in California, 1977-8



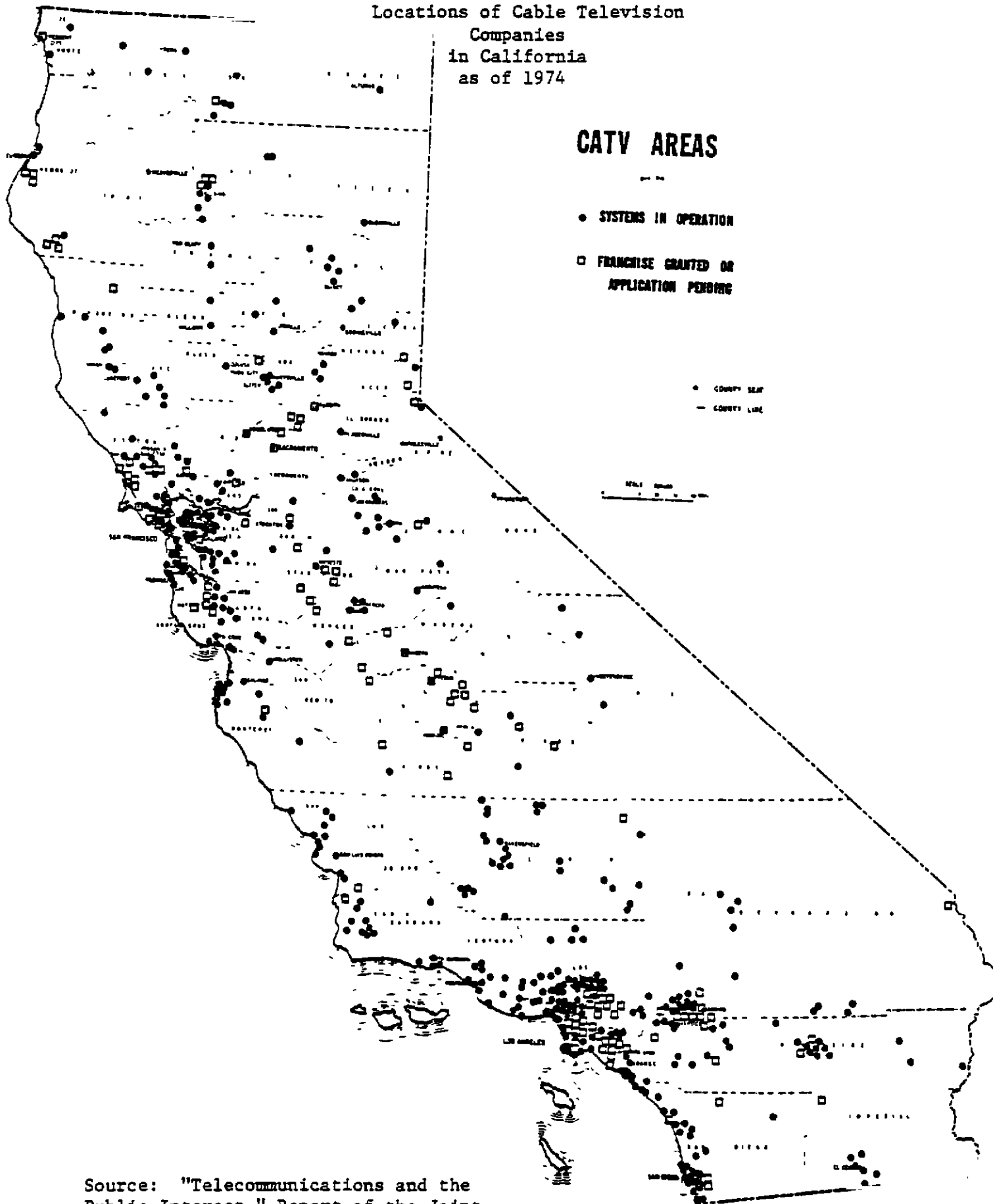
Source: Maps provided by individual
stations and compiled by CPEC staff
using "Grade B Contours," as
amended by station comment.

Map B

Approximate Broadcast Areas of Commercial Television Stations
Which Aired Instruction for College/University Credit,
1976-77



Map C
Locations of Cable Television
Companies
in California
as of 1974



Source: "Telecommunications and the Public Interest," Report of the Joint Committee on Telecommunications, California State Legislature, December 1974.

Technically, California has the capability for getting a TV broadcast signal into nearly every corner of the State; other studies have already delved into the technical and "hardware" needs for complete statewide distribution. 10/ But there are other kinds of constraints which limit the distribution (i.e., broadcasting) of ITV courses:

- . Amount of air time actually available for broadcasting. To put it in the extreme: a college could not offer in one semester its entire five-hundred course curriculum; there are practical limits to the number of hours as well as channels.
- . Costs of air time when broadcasting over most PBS stations. One might well consider these expenses, however, as displacing some capital costs of traditional campus buildings. Capital cost of the TV set is borne by the viewer, and that of the broadcasting equipment is borne by the station (often with grant funds).
- . Broadcasters' judgments about the optimal amount of time allowable for college instructional programming. These judgments entail not only differences among station managers, but also variations by region and potential audience. Historically this has been a matter of contention between educators and broadcasters. The problem is still significant enough to warrant attention in a recent report to the Corporation for Public Broadcasting. 11/

In concluding this general discussion on broadcasting aspects of ITV, the point to be made is this. If California's higher education community wants to make an instructional series available to either a mass audience or a widely dispersed one, the technical capability is already in place for broadcasting it to over 95 percent of California homes, and most offices as well. In practice, however, such distribution requires multiple delivery structures--colleges, stations, and others--working cooperatively. That is simpler to achieve in some regions of the State than in others. As stated in another section of this report, moreover, open broadcast is not the most appropriate delivery for all levels of instruction beyond the campus classroom.

ITV INVENTORY THROUGH TWO SEMESTERS (1976-77)

Altogether, there were at least forty-four different college course series broadcast in California during the 1976-77 academic year. That is, somewhere in California during that year, each of forty-four series was aired at least once in conjunction with a college credit course. Only seven of these, however, had a distribution broad

enough to warrant calling them "statewide." Most of these seven were sponsored by the California ITV Consortium for in-service education. Most of the 44 courses overall, on the other hand, were sponsored by Regional Consortia of Community Colleges. Before discussing what was available in any particular region, it is important to make some further distinctions among the types of courses offered.

Types and Distinctions

One crucial difference to remember is between introductory or lower division credit courses and those designed for higher levels--from upper division through continuing professional education. This distinction is important because different instructional levels cannot presume the same motivation or sophistication in their intended audiences and, therefore, must vary the style of the televised programs and their cost. Introductory courses can appeal to very large, general audiences, while continuing education for health professionals, for example, must reach out to a specialized, but often widely dispersed, clientele. As a rule, the more general the audience/students, the more "colorful" and expensive the production, and the larger the enrollment as well as the total viewing audience.

Another significant distinction between types of ITV courses occurs because certain productions may be clearly and attractively educational, but yet not fulfill some standard course requirement in a traditional college curriculum. Some are prepared primarily not for use as formal college instruction, and then adapted by educational institutions for such use. (See "National Media Courses" by UCSD, page 7f.) "The Adams Chronicles" obviously was filled with educational insights about the history of the United States and had nationwide publicity. First aired for the Bicentennial, this series had a large and steady viewing audience, however, fewer than four thousand Californians enrolled in its related course for college credit, offered by at least fifty-seven colleges. More than fifty-seven hundred people meanwhile sought credit in a consumer's telecourse in understanding real estate, and over five thousand enrolled in the TV course in child development.

These distinctions between types of courses are sometimes subtle, and are quite separate from differences of quality. This whole matter is important to sponsoring institutions, however, since their efforts are reimbursed not for their overall educational impact but only for actual enrollments for academic credit. Thus, some TV courses may be highly educational, even adroitly instructive or motivating, without moving people to enroll for college credit in one of the sponsoring institutions. Other TV courses may strike the viewer as more directly translatable into academic gain, and move him/her to enroll.

In practice, lower division telecourses are sponsored by Community Colleges, and upper division and continuing professional level courses, by the California Instructional TV Consortium and other senior institutions. This distinction is prescribed by the 1960 Master Plan for Higher Education and by the different ways in which the sponsoring institutions receive support. Universities and Community Colleges have collaborated, however, in preparing portions of some courses. There is no technical barrier to collaboration on the development of telecourses. Courses designed for in-service education of professionals and paraprofessionals, however, do not always fit neatly into the levels of lower division, upper division and professional education. Some of the funding difficulties related to all this will be discussed later in this report.

Inventory 1976-77: Lower Division Courses

Overall, courses designed for the introductory or lower division level (nearly all sponsored by Community Colleges) predominate. Table IV lists the ITV courses offered for credit in 1976-77 at that level. At least thirty lower division credit courses--i.e., distinctly different TV series--were offered during 1976-77 in California. These attracted enrollments of some fifty thousand, averaging about ninety-one enrollees per course per sponsoring campus. Table IV also displays the courses in rank order by initial enrollments.

It is difficult to establish an accurate list of all courses used in the State; sponsoring institutions make varying uses of the same televised programs and assign them slightly different course titles. This in itself provides some indication that colleges do not simply rent a "canned" course; they often adapt the core materials to their own uses and their own faculty strengths. The list, nevertheless, is accurate within two or three courses for the 1976-77 academic year.

Among the courses offered for lower division credit, the most common uses of ITV (as measured by average enrollment per sponsoring campus) related to either (a) the practical aspects of maintaining household and family, as in "Time to Grow" and "Foods for the Modern Family;" or (b) acquiring a basic understanding of business and real estate, as in "Real Estate and You," "It's Everybody's Business," and "Law for the '70s," or (c) understanding the humanities, as in "Search . . . for Personal Meaning "

From the standpoint of number of courses broadcast for each field of study, the field of education reaps the greatest use of television. Teachers utilize it for their own in-service training. But, considering only courses offered for lower division credit, the fields deriving greatest use of this mode of instruction were: Real Estate, Business, Art, and Home Economics. See Table IV-A.

TABLE IV.

Courses with Broadcast Television Series Offered
for Undergraduate Credit in California,
Fall 1976 - Spring 1977

TV Title/Course Title/ Academic Discipline	No. & Length of Programs	Term F '76 Sp '77	Consortium (see Table I)	Indiv. Colleges	No. Spons. Inst.	Enrollments:	
						Inst.	Avg. per campus
1. "Real Estate and You" ["Consumer Real Estate"] (Real Estate)	30 30 min	x	So Cal. BA VA		60	7,972	132.9
2. "Law for the '80s" (Business)	50 30 min	x	So. Cal. SB VA		44	5,506	125.1
3. "A Time to Grow" ["Human Development"] (Psychology)	45 30 min	x	So. Cal. SB		37	5,454	147.4
4. "It's Everybody's Business" ["Introduction to Business"] (Business)	30 30 min	x	So. Cal. SB BA		56	4,615	82.4
5. "From Chance to Chance" ["Habit. Appreciation"] (Music)	45 30 min	x	So. Cal. BA VA		54	3,992	74.0
6. "Adams Chronicles" (History)	13 60 min	x	So. Cal. SB BA VA		57	3,791	66.5
7. "Search: Quest for Personal Meaning" (Philosophy/Humanities)	45 30 min	x	So. Cal.		30	3,649	121.6

TV Title/Course Title; Academic Discipline	No. & Length of Programs	Term F '76 Sp '77	Consortium (see Table 1)	Indiv. Colleges	No. Spuns- Instlt.	Enrollment:	
						Init.	Avg. per campus
8. "Foods for the Modern Family" (Home Economics)	45 30 min	x	So. Cal.		29	3,483	120.1
9. "Classic Theatre" (Drama)	13 90 min	x	So. Cal.				
		x	SD		56	2,849	50.8
		x	BA				
		x	VA				
10. "Dimensions in Cultures" (Anthropology)	30 30 min	x	So. Cal.		29	2,709	93.4
11. "History of Art" (Prof. Lennon Tierney)	45 30 min	x	BA		19	1,475	77.6
12. "Making Things Grow" (Agriculture)	30 30 min	x	VA		8	951	118.9
13. "The Home Gardener" (Agriculture)	16 30 min	x	VA		8		
		x	Cent Val.		6	780	52.0
		x	→ Conalline		1		
14. "Clothing Construction" ["Connie's Clothing Corner"] (Home Economics)	30 30 min	x	BA		16	562	35.1
15. "Consumer Nutrition" (Home Economics)	36 30 min	x	VA		6	553	92.1
16. "Values and Morality in School" (Education)	12 30 min	x	→ LaVerne + 9 CSU		10	380	38.0
17. "Real Estate Principles" (Real Estate/Business)	45 30 min	x	84		5	306	61.2

TV Title/Course Title; Academic Discipline	No. & Length of Programs	Term F '76 Sp '77	Consortium (see Table 1)	Indiv. Colleges	No. Spons. Instit.	Enrollment Instit.	Avg. per camp
18. "Introduction to Property Management" (Real Estate/Business)	45 30 min	x	SD		5	303	60.6
19. "Course of Our Times, Part II" (Social Science)	36 30 min	x	SD		6	192	32.0
20. "Physical Geography" (Geography)	45 30 min	x	SD		4	156	39.0
21. "Anyone for Tennyson?" (English Literature)	16 30 min	x	SD		4	88	22.0
22. "Biosphere and Biosurvival" (Biology/Ecology)	28 30 min	x	SD		4	70	17.5
23. "As Man Behaves" (Psychology)	30 30 min	x	--	College of San Mateo	1	64	64.0
24. "Craft of the Article" (English)	16 45 min	x	--	College of San Mateo	1	52	52.0
25. "Basic Ground School--Pilots" (Aeronautics)	45 45 min	x	--	College of San Mateo	1	24	24.0
26. "Making It Count" (Computer)	20 30 min		--		1		
27. "Wheels, Kilns and Clay" (Art)	40 30 min	x	--	USC	1		
28. "Open Math" (Math)	15 30 min	x	--	Pacific College	1		
29. "Guten Tag" (German II)	17 30 min	x	--	CSU, Sac'tu	1		
30. "Family Finances" (Business)	15 30 min	x	--	Fresno St.	1		
31. "Roots-Afro American Connection" (History) TOTAL		x	CSUC		13	1,426	109.0
					575	51,402	

After some trial and error early in the decade with choices of subject matter, the Community Colleges have produced and offered ITV courses preponderantly in general education. Most courses, while tailored for a wide audience, fit into established academic fields (e.g., anthropology, business, psychology, economics, humanities) even when they can be interdisciplinary

The consortia are beginning to bring forth some sequences, i.e., second-level courses with which an individual can follow up a good first exposure to a subject. After introductory psychology, for instance, there is a course in child development; after introductory sketching, the student can take "Applied Sketching Technique." This is a rather important development toward the aim of providing access for less mobile citizens to meaningful pursuit of formal education. 12/

On the other hand, ITV offers little fare at the lower division level to help people acquire the basic college "tools." There was nothing in 1976-77 via ITV, for instance, to show people they can improve their basic communication through reading and writing skills, nor to demonstrate to them basic mathematical thinking. No one was airing a TV series in U.S. History, or even in California history. 13/ For such courses, there are large enrollments and large, perennial classes on the college campuses. Many people are in effect barred by these obstacles from further ventures in formal education. For some of these subjects, learners need individual help--tutors, learning lab repetitive drill, active discussion, and response from a teacher. But currently much time of many classroom instructors goes into making repeated presentations to large groups of students in these basic subjects. A well-devised video presentation can save faculty time for giving vital individual attention. By now, many libraries retain videotaped modules in basic mathematics and English for the slow or distracted learner, once such a person gets to the campus. But there seem to be no broadcast series for showing basic skills and techniques with words and numbers. In other words, for many of the mass-enrollment, multi-section introductory or prerequisite courses, there are almost no alternatives available via instructional television.

Commission staff is not alone in observing this need. In 1977, the Instructional Broadcast Advisory Committee recommended to California Public Broadcast Commission a list of ranked priorities for needed instructional broadcasting. By unanimous choice of the Committee the first priority was in basic learning skills. The Commission subsequently made an initial grant toward multi-state production of a series on "essential learning skills" at the fifth- and sixth-grade levels. It remains to be seen whether the Commission will continue to support this category of ITV at the levels needed for high school diploma and college work. 14/ But many institutions throughout the

TABLE IV-A.

ACADEMIC FIELDS AND DISCIPLINES OF TELECOURSES
BROADCAST IN CALIFORNIA, FALL 1976 - SPRING 1977
(All Postsecondary Levels)

Early Childhood Reading	Education
Mainstreaming the Exceptional Child (Special Education and Administration)	Education
Metrify or Petrify	Education
Preventing Reading Failure: (a) "Help Us to Read" (b) "Now We Are Reading"	Education
Values and Morality in School	Education
Options in Education (William Glasser approach)	Education
Human Relations and School Discipline	Education
Dealing with Classroom Problems	Education
Teaching Children to Read	Education
Mosaic	Education/Ethnic Studies
Real Estate and You (Consumer Real Estate)	Real Estate
Real Estate Principles	Real Estate
Introduction to Property Management	Real Estate
Basic Clothing Construction	Home Economics
Foods for the Modern Family	Home Economics
Consumer Nutrition	Home Economics
Family Finances	Business
It's Everybody's Business	Business
Law for the Seventies	Business
Making it Count	Business/Computers
Wheels, Kilns and Clay	Art
History of Art	Art
Freehand Sketch	Art
Applied Sketching Technique	Art

Adams Chronicles	History
Course of Our Times	History
New Directions in Community Care, Parts I & II	Health Science
Advancing Dentistry, Part II	Health Science
Home Gardener	Horticulture
Making Things Grow	Horticulture
A Time to Grow (Child Development)	Psychology
As Man Behaves (Introductory Psychology)	Psychology
Anyone for Tennyson?	English
Craft of the Article	English
Course of Our Times, Part II	Social Science
Contemporary California Issues	Social Science
Classic Theatre	English Drama
Dimensions in Culture	Anthropology
Search: Quest for Personal Meaning	Humanities/Philosophy
Music Appreciation: From Chant to Chance	Music
Physical Geography	Geography
Biosphere and Biosurvival	Ecology
Roots - Afro-American Connection	Ethnic History
Guten Tag, Part II	German
Basic Ground School - Pilots	Aeronautics

State, if involved early in the design stage, could make multiple use of instructional modules at the college-entry level in these subjects.

Distribution (Broadcast) by Geographical Area

Thus far, the report has discussed the proportionate uses made of ITV for various academic subject areas. But how available are any of these lower division credit courses by location within California?

Considered by geographical areas, not all California adults fared equally well in the availability of instructional programming in 1976-77, as was noted earlier. Because Bakersfield Community College belongs to the Southern California Consortium for ITV, its district residents had some ten lower division credit courses available via TV. People in the Fresno area, however, had only four such courses available. In both locales, however, people showed a high degree of interest. Average enrollment per course per campus was well above the statewide average, as was the persistence rate of those enrolled.

According to the network polls and estimates, from ten to twenty people tune in instructional broadcasts for every individual who enrolls for credit. Some of the "non-enrollees" even purchase the textbook or study guide.

Residents of the Imperial Valley had available a single course in English poetry and the in-service course, New Directions in Community Care (administrators of residential care homes). San Diego, meanwhile, had at least twelve lower division courses. (These figures take into account only open circuit broadcast, not CATV.) Meanwhile, in the Los Angeles metropolitan area, TV viewers had a choice of ten lower division courses. Similar contrasts can be found between regions of northern California, although the consortium of the Northeast California Council "network" softens the urban-rural contrast somewhat.

The State, of course, cannot dictate the programming choices of broadcast stations in order to ensure access to all instructional TV equally from one broadcast area to another. But the State could do some things to encourage such access. It could, for instance, earmark funds for educational institutions or consortia to purchase air time. The PBS stations, with two or three exceptions, charge regular hourly rates for airing college instruction. Since the California Public Broadcasting Commission must award its limited instructional grant funds to public stations, those funds should directly purchase PBS air time. Other funds, if made available to groups of educational institutions by competitive bidding, could be

granted specifically for design/preparation/production/re-editing of modular instruction in subjects that typically have massive enrollments statewide. Several portions could be designed to motivate, via broadcast, those who have not had a satisfying experience with previous modes of "schooling" but could benefit from further structured learning. Other portions could be designed for heavy re-use (on video-cassettes), including selective assignments for individual needs of students.

Proposals for the design and production of such materials should require the participation of experts from more than one segment of higher education in California; this encourages subsequent participation and use by more than one segment. Apparently, what is most needed for this to occur are start-up funds for the design and planning phases. Since wide use and out-of-state rental are common for well-produced California telecourses, some State support could well take the form of a revolving fund. On the other hand, the telecourse broadcast format must not be counted on for all learning tasks beyond campus. Each distinct task requires separate consideration by experts in coordinated learning and media.

The Commission suggests that the Legislature explore the creation of a renewable fund of modest size--somewhat less than one million dollars--for intersegmental planning, design, production (or acquisition) and evaluation of instructional media materials in subjects necessary for college entry and persistence. Such materials should be planned for varied uses, e.g., modules for motivating those in need of entry-level skills, as well as for repetitive drill sessions under supervision. The broadcast telecourse should by no means be regarded, in using the fund, as the only or even the primary means of outreach. The ultimate object and use of the fund should be, however, to provide effective and economical learning alternatives for those adults beyond the campus and, for the most part, beyond classrooms, and to provide these alternatives systematically across the State to facilitate college entry and persistence. Through a joint powers agreement an intersegmental committee (not a new agency) could be authorized to receive and disburse such funds, in the form of both grants and loans, for such specified purposes. (Other academic levels will be treated later in this report.)

Response and Effectiveness

Some fifty-thousand enrollees responded to thirty telecast courses for lower division (Community College) credit in California over the two semesters of 1976-77 (this does not include summer). This was approximately double the enrollment in 1973-74, but considerably below the total in 1974-75 (approximately seventy thousand). 15/

However, an important variable in these totals which cannot be discerned is the number of different courses that were broadcast (fewer courses, as one might expect, attracted fewer enrollees); another is the number of sponsoring campuses. Another useful figure for gauging usage of broadcast ITV is the enrollment per course, per campus (PCPC): the average number of persons enrolling in an ITV course through one campus each time that campus offers the course. This PCPC figure tells the average size of a "section" which the "instructor of record," the on-campus faculty person, has to serve at the start of the course. Table IV shows that at least a half dozen courses had an average beginning enrollment of over one hundred per course, per campus, all consortium-sponsored courses. This is an important figure for cost comparisons (see below, p. 34).

While the average is thus important, however, it must be kept in mind that the range of ITV enrollments has been vast. College of the Desert, for instance, had course enrollments of three, two, and nine in Fall 1976, while Coastline ranged from three hundred to one thousand per telecourse. These represent the two extremes for that semester, but Coastline is more likely to continue with high enrollments, while colleges at the lower extreme are more likely to discontinue this mode or to advertise it more vigorously.

Once exposed to an ITV course, people tend in large proportion to look forward to further instruction by this means. Of some thirteen hundred respondents enrolled in Coastline College ITV courses during Fall 1976, for instance, nearly eighty percent expressed their intent to take another ITV course. These included some people who had already withdrawn from a current ITV course for some reason, as well as people simultaneously taking classroom courses. (The number enrolled in Coastline courses only via ITV increased 10 percent from 1977 to 1978.)

Where there are on-campus classroom courses with subject matter and level of instruction comparable to that of ITV, final letter grade distributions show no consistent variations from those of ITV students. TV in itself, as has been said, is simply a medium of communication which can be used effectively (or ineffectively) in an educative process. Evidently tens of thousands of Californians have decided that this medium, combined with others, does provide them with an effective way to learn for college credit.

For Community College ITV courses in general, the overall persistence rates from beginning to completion of a course have been better, on average, than for classroom credit courses (Knoell, 1974). Such data as we have been able to gather indicate that the persistence rate for ITV hovers around 50 percent. That is, some 50 percent complete the course for some kind of grade other than "W" (Withdrawn). That figure requires further comment, however.

Offering instruction by open broadcast, combined with the open enrollment system of Community Colleges, tends to inflate the initial enrollment total. First, some enroll without ever beginning the course. But in addition, studies by Coastline College staff have found that some students initially enroll in several ITV courses at a time and remain just long enough to decide which one might prove most interesting! They expect to drop out of one or more. That portion of enrollment should not be counted for estimating real attrition/persistence rates. Perhaps more interesting is accumulating evidence that much of the actual attrition from ITV courses--as from on-campus, classroom courses--occurs shortly before the midterm examination. (See Table IV-b.)

Evidence For Boosting Persistence

Institutions are finding that ITV course attrition can be cut, and persistence enhanced, with a relatively small amount of "personal intervention" at the proper times, such as just before the mid-term examination. Further, there are good reasons to believe that course drop rates can be significantly cut and overall persistence improved with adept use of both intervention and media, whether the student is primarily on or off campus. Some instructors have begun sending a class newsletter periodically, others have experimented with a personal telephone contact soon after the course begins. Coastline College now mails, grades and returns a weekly quiz.

One institution, while not utilizing broadcast instruction, has made discerning use of mediated instruction (audio- and videotapes) to achieve significant reductions in student attrition. Dean Louis Canter at Mt. San Jacinto College reported:

Prior to 1972 the student drop rate . . . ranged between 36 percent and 39 percent. For 1972-73 the drop rate was 23 percent, and it has decreased gradually each year to 15 percent for 1976-77.

A prominent part of Mt. San Jacinto's drive to improve in-course persistence was the establishment of a Reading and Writing Laboratory which also offers help in other study skills. This laboratory is equipped with mediated instructional materials (cassettes, films, etc.) which the student can use at his own pace; faculty with training in diagnosing and prescribing for individual students utilize taped modules of instruction. The combination has a significant influence on student persistence through the end of the courses they begin. This is not to say that a college "solved its course drop problem with media" Other means were part of this successful effort. It is to say, however, that modules of taped instruction are being used by skilled faculty to bring about significant improvement in students' learning and "survival" rate.

TABLE IV-b

Persistence Rates in Selected ITV Courses
Offered by Community Colleges,
Fall 1976 and Spring 1977¹.

Course/Series Title	No. colleges included in tally	Initial enrollment	No. students completing	Persistence rate (%)
1. Adams Chronicles	14	956	463	47
2. Foods for the Modern Family	15	1,649	863	52
3. Law for the Seventies	15	1,672	836	50
4. Freehand Sketching	6	644	412	64
5. Home Gardener	6	743	495	67
6. Family Risk Management (Consumer Insurance) (Fall 1975)	6	743	551	74

1. See narrative, pp. ____, for proper context. The number of course "completions" (students receiving any grade other than "W") divided by "highest initial enrollment available" produces "persistence rate" for this table. Colleges included in these tallies reported informally and do not comprise a "scientific sampling" of colleges statewide. They do represent a wide variety of communities, however--urban and rural, wealthy and poor, etc.

Thus the problem of attrition within individual courses (lower division) has led us to consider two different kinds of intervention--(a) person-to-person inquiry and help, as in the case of the telecourse instructor; and (b) prescription of taped modules of instruction, as in the case of the classroom instructor. In both types, the instructor provides individualized help to meet the particular student's need; in both, this kind of attention or "mentorship" is facilitated by letting an electronic medium provide the more repetitive aspects of instruction. The main point to be made is old and simple: videotaped course materials can be so designed that individual modules provide time-saving help to the instructor or learning lab director, as well as serve a broadcast purpose. The live instructor can thus spend more individual effort with those who need it. At the same time, the enrollee in a broadcast TV course commonly needs a human contact, often a simple bit of guidance or encouragement, which can dispel the anonymity in or weak commitment to this "remote learning" situation. So it appears that, with appropriate technology and the individual attention it makes affordable, in-course attrition can at last be attacked and significantly reduced. This harbors tremendous significance for postsecondary education.

If progress were made toward reducing what Scottish academics call "wastage" of students, it would benefit students, faculty, and general public too

The problem of persistence within courses has special poignancy, of course, for the part-time student. For, when the traditional "full-time" student drops one of five courses, even for sound academic reasons, the student and others can view it as an "adjustment in the course load." But when a part-time student drops one course, the student is more likely to view it as failure to achieve an important learning objective. In either case, a high course-drop rate continues an inefficient use of public resources

In this era of the part-time student and the continuing learner, the unit of accomplishment is the course rather than the semester (block of courses) or other time unit (e g., a year of full-time study). To improve student persistence through individual courses will improve persistence through sequences and programs of study. For some people, however, a single course is their objective. And in such cases, the responsibility of the teaching institution is to see that the student gets the institution's best help within that one course. Institutions have not kept comparable data, however, on course completions and/or drop rates.

Instructional media then, including co-products of taped courses in basic and general subjects, can be used to help students persist and succeed through the introductory college level. Electronic media

now provide ways to further individualize instruction and to help a student overcome particular learning barriers. The chances for improving persistence are encouraging. It should follow that proportionately more students than at present, once tasting success in college learning, would continue on to their "second tier" of college studies, if optimal use were to be made of mediated instruction statewide. Unfortunately, not enough is yet known about the dynamics of student persistence through their first-year courses into the next year or sequence.

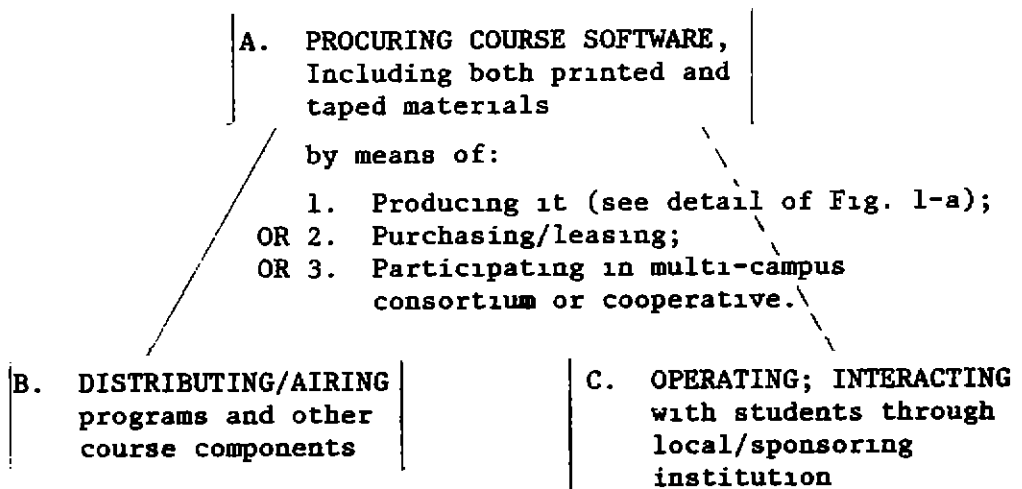
If some faculty, therefore, are indeed attaining higher in-course persistence rates by combining individualized with remote instruction, it is imperative to explore such gains for possible statewide applications. Already most of the elements are in place--faculty, students (both on-campus and beyond), and facilities--for conducting several pilot studies of using media effectively to help people begin and complete basic-level college courses. It would require only small amounts of additional support to provide for careful record-keeping, data collection, comparison, and evaluation in a few of the many institutions which already utilize learning laboratories, mentor-assistance, and telecourses. In two or three years this could yield new information helpful for cutting the rate of course drop-out

Cost and Reimbursement

For community colleges cooperating in consortia, the unit costs of offering a credit TV course by air need be no greater than costs for a regular classroom lecture course, and indeed are usually lower. It is sometimes difficult for the layman to believe such a claim, for one hears how expensive certain TV productions have become. Yet each member-college pays relatively low annual dues into the consortium fund, ^{16/} under the "joint-powers agreement," the consortium then decides whether (a) to lease an already taped instructional series, (b) to re-run a series this consortium produced previously, or (c) to undertake a new production. In some combination of these options, the consortium arranges to air from one to eight course series in a semester; each member institution makes available an on-campus instructor and offers credit for each course it chooses to co-sponsor. Since an institution bears only a fraction of the whole cost of production, airing and/or leasing, it can usually "break even" with course enrollments of well under one hundred. (See Figure 1 and Appendix B for details and illustrative cases.)

With major presentations being made via TV, the on-campus instructor commonly provides support and guidance to as many as three times the number of students he/she can teach in an average classroom lecture section (assuming individual attention in both modes). Other cost

Fig. 1: COST CATEGORIES IN OFFERING INSTRUCTIONAL TELEVISION COURSE
BEYOND CAMPUS



Explanatory note on Figure 1 and 1-a

Regardless of how an educational institution obtains and uses broadcast instruction, it must plan and design its own use of:

- (A) "Software"--taped programs, printed textbooks and study guides, examinations (if printed), circulating and duplicating these;
- (B-7) "Air time"--getting programs broadcast, or obtaining advance information if they are network/station provided; informing target audience/enrollment (as in case of specific profession);
- (C-9) Student/Faculty contact and interaction--person-to-person instruction, mentoring, tutoring, examining, grading, and other individual attention;
- (B-8& C-11) "Promotion"--informing the appropriate segments of the public about the availability of the course;
- (C-11) "Direct administration/support"--registering, recording grades, ordering textbooks, maintaining library, records, etc.

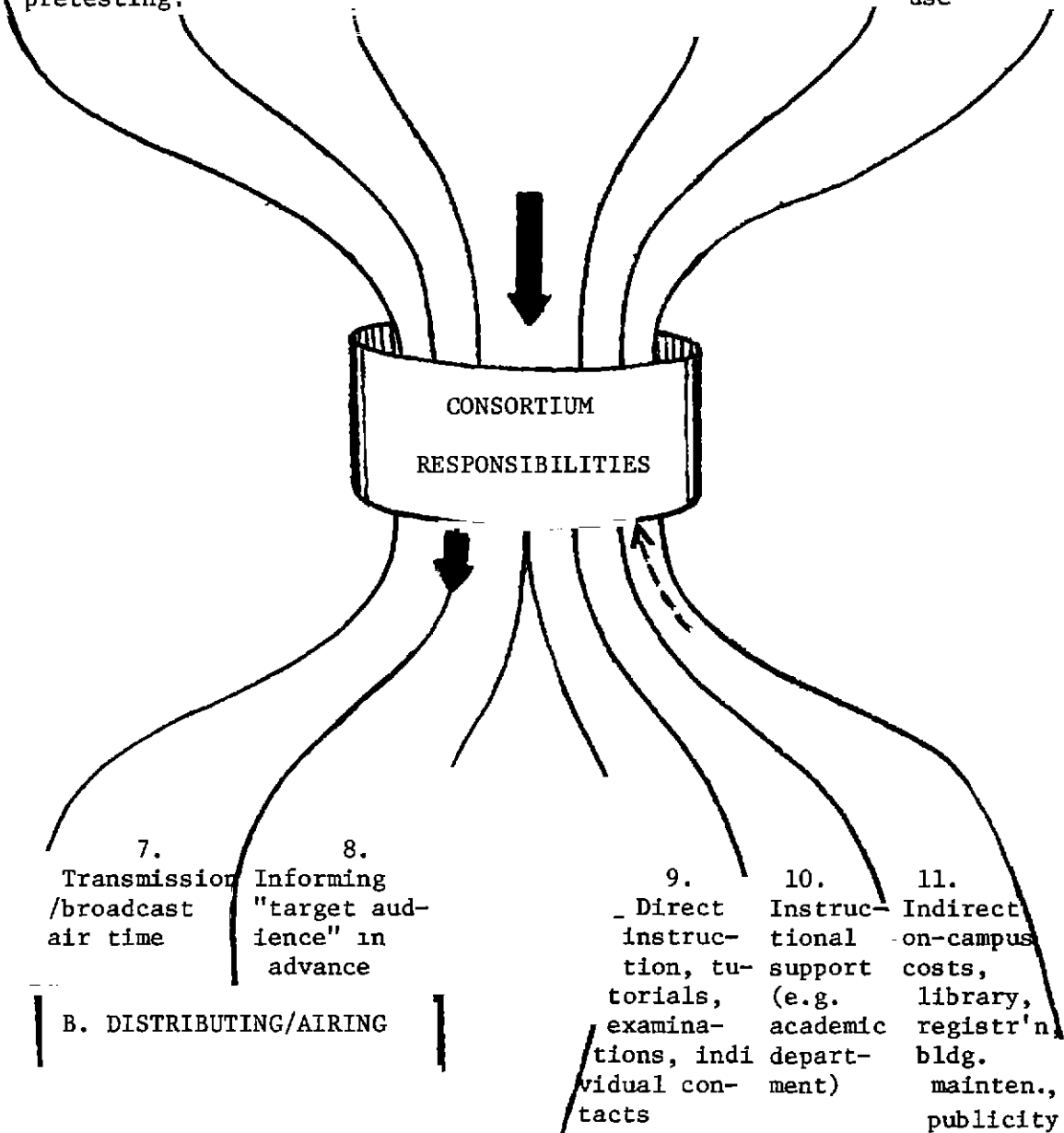
Most colleges/universities pay others to perform one or more of these functions. Frequently, a multi-institutional group or consortium receives external grants, in addition to membership "dues," toward the production of a new instructional series, which a single institution ordinarily would not receive. Although such grants are certainly of interest and pertinent to the subject of "cost," they are not specifically taken account of here because they are not part of the public support costs, any more than donations of private gifts to a public school. Local faculty participate in selection and/or production-design processes, usually by specific contractual agreements, and sometimes take part on-camera.

Figure 1-A

COST CATEGORIES IN OFFERING AN INSTRUCTIONAL TELEVISION COURSE
(BEYOND CAMPUS)

A. PROCURING COURSE SOFTWARE BY DESIGNING, PRODUCING, TESTING

- | | | | | | |
|--|--------------------------------|--|---|--|--|
| 1. | 2. | 3. | 4. | 5. | 6. |
| Proposal, research & design of course; pretesting. | On-camera instructors & guests | Studio production -- activities & facility | Tapes and dubbing, incl. library copies | Preparation & public'n printed materials | Evaluation & revision after first complete use |



B. DISTRIBUTING/AIRING

C. LOCAL OPERATING, INTERACTING

differences include the different amounts of use and maintenance of buildings, clerical support (slightly more for the ITV), and transportation ^{17/} For roughly one-third of those who currently enroll, however, "transportation" for regular classroom attendance would not be an option at all; they are either house-bound or work-bound. Illustrations of costs, using actual experience of colleges with both telecourse and regular classroom modes, indicate that an academic credit awarded for a telecourse costs from one-third to two-thirds as much as the same unit awarded for a regular classroom course. (See Appendix B for projections and comparisons of unit costs.)

Since the passage of SB 941 (Gregorio, 1978), the Education Code (Section 84500) permits a community college district to be reimbursed from the State General Fund for telecourses whose credits are accepted for transfer by the State University and the University. One "student contact hour" is counted for each unit of credit the course carries. Funding for ITV courses in Community Colleges is thus still tied to the numbers enrolled (ADA). As now construed, the rules limit the "class size" to 125, a limitation not imposed on classroom courses. There is no provision for preparation and production of new courses in advance of actually offering them. Nor is there any built-in incentive to attain maximum gains in learning.

The current system of reimbursement for any kind of teaching does not provide incentives for determining the most efficient and effective combinations of resources--including both human and electronic. Even if reimbursed at full cost, and allowed to count the entire census enrollment for ADA, a college is not "rewarded" for improving the learning impact. Indeed, the law now even prevents, in a financial sense, the offering of remedial instruction through alternatives to the classroom (e.g., programmed texts and learning lab drills) if the instructor is not always present. For such work is not accepted for transfer credit, no matter how effective. Regulations also limit artificially the number of students per faculty member, thus thwarting one major benefit of mediated instruction. Practitioners--in both Community Colleges and the senior segments--have maintained that both effects--more learning and lower cost--should be attainable with CIS modes of instruction. In addition there is the significant outreach capability of broadcast. Several have said they would welcome the opportunity for reimbursement on a basis of measured learning effects.

Learning effects are not the same as "course completions," but we believe for funding purposes that conditions are right for careful consideration of the latter as a basis for reimbursement. Whatever principle is adopted as the basis should apply regardless of what modes of teaching are used, i.e., to all types alike. Pay for the number who stay through the end of the course or unit, thus receiving

some grade other than "W." In this it would seem there is incentive for finding the best ways to help each student attain "closure" on the unit of study undertaken. Perhaps some factor must be built into the formula to recognize course differences by size of initial enrollments, and for the "start up" costs prior to the year a CIS course is first offered. But the principle of reimbursement for an end product seems an attractive challenge for educators knowledgeable about diverse modes of teaching/learning. Let them test and choose the ways best suited to each learning task. For students and taxpayers, too, it could lead to more efficient ways of attaining specific learning goals.

Inventory 1976-77: Upper Division and Continuing Professional

Up to this point, the discussion of the telecourse inventory has dealt mainly with courses provided by Community Colleges for lower division credit. Several findings have been mentioned, however, which pertain to senior institutions as well. It has been mentioned, for instance, that in-service education for teachers has been the most widely distributed among courses using the broadcast medium. Also, the California Instructional TV Consortium has repeatedly arranged for statewide airing of instruction needed by working professionals for compliance with new laws and regulations, such as writing Environmental Impact Reports. Some of the statements already made about lower division courses apply as well to courses at more advanced levels. For instance, using electronic media for major portions of instruction at these levels can prove far more economical than gathering all the needed resource people and the students into classrooms throughout the State. Moreover, student persistence through in-service types of courses surpasses that of students in most lower division, introductory courses. Yet the senior institutions operate under different constraints from those bearing upon the Community Colleges. These constraints have turned the universities away from attempts at either lower or upper division instruction via broadcast, and towards filling a different category of need--continuing education for those faced with some urgency to master new information and skills in their work with the public. The point to be made here is this: to report what the senior institutions have been doing with broadcast telecourses (1976-77) should not type-cast them nor delimit one's thinking about what they might accomplish with remote instruction in the future.

For continuing professional and occupational in-service education, the chief advantage of remote instruction does not lie in reaching "masses" of students; here the advantage lies in reaching widely dispersed practitioners, even if their numbers are sparse, with reasonable economy of time, travel, and repetition of effort by the resource "experts." Of the seven courses (at any level) that had a

statewide airing in 1976-77, five were of this continuing, in-service instruction nature, and four of these were the work of the California Consortium for ITV (California State University and Colleges). The Consortium is really the only organization set up for statewide distribution of instruction using open circuit broadcast media. As explained below, it is seriously hindered from fulfilling its potential role in undergraduate instruction. Consequently, it has concentrated on statewide education for professional and occupational groups which feel some urgency about acquiring the new knowledge--sometimes because of new laws.

In 1976-77, a majority of ITV courses for professional or continuing professional education were offered for teachers (K-12). (See Table V.) In some cases, the Consortium made special efforts to invite parents, administrators and teachers-aides to enroll in the series too ("Early Childhood Reading")

La Verne University is the independent institution in California presently making major use of ITV broadcast, and it continues to specialize in continuing education for teachers. It is a co-producer of several series in this field, which have nationwide distribution. The institutions vary widely in the level of academic use and credit allowed for these.

The California ITV Consortium also develops and distributes tele-course materials for continuing education in professions other than teaching. In 1976-77, in cooperation with dental associations, the Consortium repeated a statewide airing of part of its instructional series in current dental care. Also in 1976-77 the Consortium introduced a new series, "New Directions in Community Care" (Parts I and II). In the latter case, the State University again demonstrated "the use of the media in the implementation of law"--as its director, Dr. Stuart Cooney, points out. In view of the State's educational requirements for licensure/relicensure of residential care homes, this series on "Community Care" was timely for that dispersed population. As near to statewide coverage as can be attained currently with broadcast TV was attained for the Community Care series and for some of the teacher in-service series.

Before discussing special problems of remote instruction at the upper division level, it is necessary to say more about continuing professional education.

State-Required Continuing Education

Without a means for statewide distribution of large portions of instructional material, it is sobering to estimate the private cost of mandated continuing education in years ahead; it becomes a State

TABLE V
INSTRUCTIONAL TELEVISION FOR CREDIT
ABOVE THE COLLEGE SOPHOMORE LEVEL
IN CALIFORNIA, FALL 1976 - SPRING 1977

	General Title of Broadcast Series Used in Course, and Subject/Field	Level of Credit/Use						Comments
		A	B	C	D	E	F	
1	Contemporary California Issues (Interdisciplinary)	x	x	x			x	Orig Produced for Bicentennial by "Outreach Consortium" (Intersegmental)
2	Advancing Dentistry, Part II (Dental, including paraprofes- sional)	x		x		x		Cal ITV Consortium
3	Dealing with Classroom Problems (Education)			x	x			University of LaVerne/ Media V
4	Early Childhood Reading (Education)			x	x			Cal ITV Consortium
5	Help us to Read (Education)			x	x			Cal ITV Consortium
6	Human Relations and School Discipline (Education)				x			University of LaVerne/ Media V
7	Mainstreaming - Implications for Classroom (Special Educ /Admin)			x	x			Cal ITV Consortium Aid to fulfill Legis- lative mandate
8	Metrify or Petrify (Education)			x	x		x	Cal ITV Consortium Aid to fulfill Legis- lative mandate
9	Mosaic (Education/Ethnic Studies)			x	x		x	Cal ITV Consortium Aid to fulfill Legis- lative mandate
10	New Directions in Community Care (for Administration of Comm Care homes)					x		Pursuant to mandate of Legislature, percent fund from Voc Rehab and Dept of Health
11	Now We Are Reading (w/5, above) (Education)			x	x			Cal ITV Consortium
12	Options in Education, Parts I & II (Education)				x			University of LaVerne/ Media V, "Wm Glasser Approach"
13	Roots - Afro-American Connection (History, Ethnic Studies)	x	x				x	
14	Teaching Children to Read (Education)			x	x			University of LaVerne/ Media V
15	Values and Morality in School (Education, Ethics)				x			University of LaVerne/ Media V

Key

A = lower division
B = upper division
C = professional-preservice
D = teacher inservice professional
E = professional relicensure/inservice
F = personal development

"job tax," de facto. By 1980, some seventeen distinct professional and occupational groups in California will have State-mandated educational requirements for periodic relicensure. Estimates made in 1977 indicated that more than 600,000 Californians (including 234,000 real estate salesmen, 90,000 real estate brokers and 180,000 registered nurses) are subject to such statutory requirements, not once but periodically throughout their careers, to retain their licenses. There are others, such as lawyers, whose continuing education requirements are substantial but not statutory. Most relicensure requires evidence, not of further learning, but of further seat-time in classrooms and lecture halls and at conferences--the "Continuing Education Unit " It would seem timely for each of the pertinent state licensing boards to consider allowing licensees some kind of option utilizing remote instruction, broadcast or otherwise. The Board of Registered Nursing, as one example, already supports efforts to use modules of taped instruction for nurses.

Before institutions can proceed far with the investment of time and funds required for producing new instructional media options for continuing education, the State needs to delineate in some detail who may provide what. For some professional and paraprofessional fields, there is an increasing uncertainty about which institutions ought to provide the continuing education needed. This "delineation of function" was begun in large brush strokes by the Donahoe Act of 1960 (Master Plan for Higher Education) and reaffirmed in 1974. Many in the field of continuing education feel that the Master Plan needs greater specificity now. Greater specificity of mission can be approached in two quite different ways. On the one hand, it would seem reasonable that, for certain professional and paraprofessional occupations--those offering crucial human services--whose initial preparation takes a person through at least the sophomore college level, continuing education thereafter becomes the responsibility of the senior segments. Community colleges might very well contract with the latter in order to provide classes within closer geographical reach of the practitioner. According to this approach, accountability, as well as economy of expert effort, both require that the local two-year college should not be left in the position of having to contract individually with moonlighting entrepreneurs, however expert the individuals.

Thus the chronic problem of who ought to provide continuing professional education could be passed progressively upward through the professional school itself. One difficulty with that, however, is that not all continuing education which a professional needs deals with the very latest and newest knowledge. A nurse returning to service after prolonged absence, for instance, may need to take a refresher course in basic nursing; a physician may need to learn more about administering an office. The community college might serve

these two very adequately. Whether or not such courses count for maintaining one's license is up to a licensing board.

Thus, the other approach to designating responsibility for continuing professional education is through the respective professional licensing boards and/or associations. Each profession has its own unique needs, its own types of expertise to uphold and keep current; perhaps its own board has the best chance of discerning just what kinds of further education are most necessary. Perhaps the Postsecondary Education Commission should discuss with each board the process by which it authorizes institutions to provide the continuing professional education it regards as vital for professional excellence.

The point is that the continuing education division of a university cannot risk the costs of developing mediated instruction for professionals if a community college may offer almost the same material at a lower fee a year or so later. Most important, public health and safety--the primary reason for State licensure--is better served if highly trained professionals keep abreast of changes in their specialty through studies specific to that field, rather than through more convenient but more general college courses.

At the same time, delineation need not stifle cooperation--indeed, it can make joint efforts in modular instruction more viable. For instance, faculty from the two- and four-year segments, with approval of the appropriate licensure board(s), could team up to produce video instructional series with some modules for nurses, some for related paraprofessionals, and some for physicians or hospital administrators on a common theme. This is only an illustration. By basic agreement with the licensing boards about how the different levels of education shall articulate their programs, specialists from more than one educational segment can develop instructional media cooperatively for continuing education at more than one level. At present, the California Educational Telecommunications Committee could well serve as the convener or catalytic agent for such joint planning for continuing education media for licensed professionals. It would require a minimum budget for regularly convening the representatives of appropriate colleges, universities, and licensing boards.

Costs, Fees, and Delivery

Once it is made clear at what level the responsibility lies for providing continuing education for various licensed occupations, educators can apply themselves to providing efficient options for fulfilling these needs.

In the senior public colleges and universities, the Continuing Education/Extension divisions constitute the primary structure for outreach; this outreach includes any instructional broadcasting which public universities wish to sponsor. Without such a structure, each academic department and school would have to handle its own programs for non-regular students--the graduate who wants to bring his/her knowledge up to date, the focused inquirer not wishing an entire degree or major, the citizen in need of dependable information about a new development--all on a part-time basis. In order to offer any course at any level via broadcast ITV, California's public four-year institutions must work through their divisions of Extension and Continuing Education. These divisions have been hampered by the fee structure in efforts to make more intensive use of broadcast media. This structure was fashioned to limit State expenditure on extension services in general, but not necessarily to discourage outreach for upper division credit courses.

Fees for Extension/Continuing/Concurrent enrollment are calculated for the enrollee to pay full cost, regardless of the academic level. This amounts typically to \$37 per credit-hour in California State University and Colleges, not including books or other costs.

Contrary to a common belief, extension courses often carry regular academic credit; but extension credits may later be handled as though they had been earned in a foreign university. To apply them toward a degree even in the same institution may require prior consent from a dean and may not be counted toward "residency" although the instructors may be regular faculty members. Increasingly, courses designed especially for continuing professional education carry a rating of a certain number of "continuing education units" (CEU). These units have no value toward an academic degree, but are an effort to record the number of hours of actual exposure to instruction. They have value toward renewal of professional licenses, and are used by some employers for advancement purposes. (Some extension courses carry neither academic credit nor CEUs, but they are not part of the consideration here.) In all cases, however, university extension courses do entail full-cost registration fees. (Total registration fees, on average, approximate the operating expense of the extension division, including development of new courses.)

From No-Fee to Full-Cost

At present, if a publicly supported university wishes to make available to the general public a televised course--in parenting, for example--for undergraduate credit, it must charge a registration fee on the same basis as for continuing education in one of the professions--self-support fees. A community college may offer the

course practically free for lower division credit. At least one university has met this handicap by arranging to produce and publish the materials and then to lease the TV series to community colleges for lower division use. If the university wanted to incorporate these same video components, meanwhile, into an upper division course it could utilize the same broadcasts used by the community colleges for lower division with appropriate differences in the other components of the instruction; but it would still have to charge the full-cost fee for upper division credit, in contrast with the nearly free lower division credit offered by the community colleges.

It is important to notice the abrupt difference in enrollments that occurs when, as in the case of the Community Care series, upper division credit is offered for a full-cost fee through Continuing Education in the universities and lower division credit for almost no fee through community colleges. Thirty of the latter became co-sponsors of this course, "New Directions in Community Care," with the senior institutions (the State University Consortium) that produced it. Not only greater accessibility from where the participants live and work, but also the significant difference in direct user costs helped the community college ITV course attract fifteen times more enrollments. 18/

At upper division levels, students also face great uncertainty about using their extension credits in a degree program with a major and residency requirements. So the universities are effectively blocked from finding efficient ways to use broadcast media at undergraduate levels unless they also use the same series for an in-service/professional function.

The fee-differential problem--the abrupt disjuncture between free ITV through community colleges and full-support fees through the universities--can hardly be resolved apart from changes in the support of university extension which have ramifications well beyond the "media" theme of this report. Yet the potential benefits of providing remote mediated instruction in selected subjects statewide are compelling. California needs to find ways to allow these creative edges--the Extension Divisions--of the universities further flexibility for their task. Directions to explore include the following options:

Option 1.

Higher levels of instruction have progressively higher cost, although educational and registration fees remain the same from freshman to senior status. The State has long acknowledged a public benefit in citizens' attaining the bachelor's degree because it has charged regular students no more for upper division than for lower division studies in the universities.

Therefore, it would seem reasonable if the State were to subsidize upper division extension courses whose credits are applicable toward a degree, just as it subsidizes regular upper division instruction.

Option 2.

Extension courses at the upper division credit level, when approved and taught by regular departmental faculty, deserve transfer value, even when they have to do with one's academic major. (Otherwise, why would the faculty approve them for extension credit?) Courses of this nature offered by remote instruction (e.g., video, audio, teleconferencing), where credits can be transferred into the student's degree program, deserve to be subsidized to the same extent as the courses offered in the more traditional classroom mode and to apply toward the "residency" requirements.

Option 3.

In order to encourage use of the most efficient combinations of media, including remote instruction, for various fields of learning, the State could reimburse university extension for completed credits earned via remote, individualized or self-paced instruction in credit courses (bachelor's).

University administrators have expressed the need, in recent years, to make better use of the new strengths of educational technology including electronic media. Alex Sherriffs, Academic Vice Chancellor of the State University segment, has said, for instance:

Evidence of our interest in instructional development and in alternative delivery systems is the formation of a Division of Learning Services Development . . . (with) Instructional Technology component . . . within the Chancellor's Office. This action marked the end of a period during which too little systemwide attention had been given to educational media.

Many of the myths and fears of the unknown concerning technology are at last beginning to diminish. Attacks such as . . . claiming that it is carried out by impersonal and demonic machines, or that it will lead to faculty unemployment are becoming less frantic It is becoming understood that if we deny television, computers and a score of other resources, we deny highly effective ways of teaching and learning Especially as we face economic and productivity problems . . . we must modify our modes of presentation and bring up to date our understanding of the learning and teaching process

(Address to State University Media Personnel, December 1976)

Furthermore, the State University Trustees adopted in 1978 a new policy strengthening the intercampus planning and development of instructional media. (The previous policy statement in this regard was written in 1956.) Within the University of California generally, the Extension Division at the San Diego campus has shown the most consistent activity in offering courses by means of electronic media beyond the campus and classroom. The Regents themselves recently took a notable step forward in signing a contract with the British Broadcasting Company (BBC) to develop jointly a telecourse on Astronomy (1977).

It may well be that upper-division teaching/learning cannot utilize open broadcast media as frequently as do other levels. Upper-division courses may more often require more group interaction, more immediate give-and-take, such as ITFS makes possible. (See "Instructional Television Fixed Service," pg. 5). Or it may be precisely at this level where the student can benefit most from encounters with the great scholars--the Bronowskis and the Leakeys and the Galbraiths, for instance--in his or her chosen major field, if those are not personally present at the "home campus." Also from a statewide perspective, much standard information--in the sense that there are standard textbooks in major fields--could be presented through some electronic medium, thus allowing the local instructor more individualized use of the student contact hour. In any case, there is virtually no State-supported way at present by which a house-bound or office-bound person can complete a baccalaureate degree through remote instruction, except by correspondence. ("Off Campus" degree programs are almost all conducted in off campus classrooms.) External degree and certificate programs still largely require commuting to classrooms.

If the public universities are to have meaningful opportunities to reach Californians beyond campus especially at the undergraduate level, some reasonable way must be devised to allow and encourage their best faculty working with Extension Divisions to do so with their media capabilities. The idea of State support for upper-division transferrable credit earned via Extension's remote instructional capability seems worthy of serious exploration--especially if a statewide cost savings (per unit of instruction) could be realized.

As a major part of that remote instructional capability, the California Consortium for ITV has received its budgeted State University's support only from the "Continuing Education Revenue Fund" (extension fee-generated), and has raised the rest itself in the form of outside grants for production of video series, sales of study guides, etc. 19/

The Continuing Education Revenue Fund, governed by the deans of continuing education and not including any monies from the State General Fund, affords the ITV Consortium no year-to-year stability, and little margin for evaluation or measured experimentation.

The Consortium for ITV is a unique California resource for the tailoring of new ways to provide statewide continuing professional/occupational education efficiently. Given the expressed innovative intent of State University leadership, this Consortium should receive a sustaining part of its support as a regular item in the annual State appropriation to the State University system.

FURTHER TECHNOLOGICAL DEVELOPMENTS

This study has avoided flights of futurism, speculation about what further technological discoveries might accomplish for adult learning beyond the classroom. Yet it is important to take into account several developments already in production and mentioned to staff frequently during the survey; although not yet widespread, their practical effects will be felt in education, one way or another.

Three Changes Toward New Flexibility

The videorecorder now affords an owner the opportunity to record on videotape any broadcast program for later viewing; recording can even be done in the person's absence, thus overcoming the chief problem of fixed scheduling inherent in broadcast. A user of the videorecorder can play back programs he/she has missed, and can repeat until the content has been mastered. For those able to afford it, this new capability will greatly enhance telecast as a means for remote instruction.

The videodisc, however, promises more of a decisive change in remote learning. The videodisc has been described as the visual equivalent of a phonograph record. It is a storage device with an actual disc shape, and is expected to be available soon at prices comparable to prices for single issues of popular magazines. The advent of an inexpensive videodisc could have an effect on education similar to that of the paperback book. Reportedly such a disc will be as easy to mail as a thin book. A home viewer will have the option of playing the disc for two or more hours continuously, or of skipping through it selectively, or of repeating portions of it until the information has been learned. With this new capability, an educational institution or publisher might completely circumvent the broadcasting systems in getting material to the student anywhere in the

state, as is already done with audiocassettes and the far more expensive videocassettes.

In the case of both the videorecorder and the videodisc, an important cost assumption is that the student has access to the "capital equipment" for remote communication.

Another current technological development, mentioned earlier, is the use of an ITFS system to feed instructional programming into one or more local cable television systems. Cable, of course, has more channels than a broadcast station has, and thus can multiply the outreach of an ITFS if it is situated where cable ends can carry its programming. In using this for education, an important cost assumption would be that subscription to cable service would not be too expensive for those wanting to enroll in the remote instruction. The available "airspace" (bandwidth) for ITFS, furthermore, is reportedly very limited. So it seems important that educational institutions reserve some assured access to such a public vehicle for on-going instructional purposes, as other kinds of organizations begin to acquire the remaining licenses.

Each of the new technical developments described above is a reminder of the continuing increase in ways adults can communicate and learn without going to a classroom. Increasingly, also, there are ways to free the learner from time schedules fixed by broadcasters. This technology still leaves the active process of learning to the learner, it offers help but no ultimate substitute for individual motivation or disciplined attention. Appropriate interaction with others, such as with student peers and instructors or other staff, still is left for the student and the educational institution to arrange. But the arrangements have become increasingly free from fixed places and fixed times--fixed, that is, by someone other than the student and the instructor. (The type of student usually meant here is older and more independent than the so-called "traditional" college student.) In view of this trend, it is not necessary for the State to rely wholly on broadcast to ensure accessible education for all levels above high school. Some other combinations of media will prove appropriate and efficient for some functions. What seems needed is a statewide plan for developing remote instruction that is most appropriate--both effective and economical--for each given learning level or task. Another need, apparently, is to apprise the noncommercial public of what is already being achieved with current technology in postsecondary education.

Swift Change Since the 1960s

As previously stated, many college and university faculty members seem not so much opposed to as simply unacquainted at firsthand with

the state of the art in instructional technologies. Yet certain uses of ITV and a few other combinations are well-received by students. This gap or lag is quite understandable. Many present-day professors themselves, as undergraduates, once sat through classes in which their lecturer came to them "live and unrehearsed" via a black-and-white TV screen in the classroom; closed circuit TV is still utilized in some places to solve the dilemma of too-large lecture sections or to share an outstanding lecturer with neighboring campuses. At certain academic levels this approach is still adequate. But for many students that kind of use is too impersonal and even stultifying. Unfortunately it often is this memory which recurs to dampen faculty interest in what combinations are currently attainable with instructional media, even beyond the campus

It is ironic that, despite limited faculty interest, some California educators and media specialists have attained a high national standing and wide acclaim for telecourses they have designed and produced. Certain institutions and leaders and several TV stations continue to bring forth award-winning instructional series and lease them nationwide.

Two decades ago the Governor of California convened a general conference highlighting "educational television." Since that time much has been attempted, and much accomplished in college and university uses of electronic media for instruction. Only within the past eight years, however, have institutions found economical ways to use these means for remote instruction; with these means they now involve people by the tens of thousands per semester. From a statewide perspective, moreover, there are some areas of intensive activity, offering credit instruction to the home-bound and the work-bound; two or three professions are keeping up to date by such means. But by and large, the State is not making optimal use of its media capabilities for learning, nor does its system of postsecondary education as a system give its practitioners high priority or encouragement toward such a goal. It seems timely, at this peculiar juncture for California colleges and universities, to convene a conference again under State auspices, that will call attention to the best things now attainable in education with the help of electronic media--the economies of time, of travel, and of resources, for instance. If top-level administrators, as well as legislators and faculty leaders, could witness more of what is presently attainable, it would help in the setting of realistic yet exciting goals for the decades ahead in postsecondary education.

The California Postsecondary Education Commission proposes a state-level conference in 1979 on instructional media, with emphasis on postsecondary educational uses beyond the classroom, to be co-sponsored by the Governor's Office and the Commission with advice of segmental offices. The dual

intent is to give greater public visibility to what is currently achievable for the on-going educational benefit of Californians at-large and to provide faculty and legislators greater firsthand familiarity with the state of the art.

INTERSEGMENTAL PLANNING FOR REMOTE INSTRUCTION

It is widely known that Californians returning part-time for further education have certain characteristics strongly in common. They tend to be older than the traditional 18 to 24 year old college students, to be self-motivated, to have full-time responsibilities other than attending class, and often less mobile. From the standpoint of their educational needs, however, these continuing students differ widely. An undetermined number have "entry level" needs--learning to communicate more adequately, for instance, is a common embarrassment for adults. But another large group are required to keep abreast of changes in their professional or occupational field; some need renewal of skills. These are mostly quite advanced and successful learners. Yet another group want to remain alert to the changing world around them, gain new understanding of current issues. Such citizens are essential to a modern democratic state. The point is, the same combination of media is not likely to provide the best vehicle of instruction for all different needs of remote learners. No one maintains the "tube" can do it all! For physicians and nurses, for example, new surgical techniques do not need to be demonstrated through open broadcast, while broadcast may be an effective outreach at first for helping these less prepared for college work. It would be a mistake for the State to attempt all kinds of remote instruction through broadcast media.

Geographical regions of California, furthermore, vary in the kinds of capabilities they have for mediating instruction to the house-bound and the work-bound. Several good ITFS systems have been mentioned, but these are not in all areas of high density population. The same is true of cable systems. Furthermore, there is no statewide inventory of actual hardware and installations available for instructional uses. Not only is there no inventory, but there also is no statewide planning process, involving two or more segments, for the development and use of coordinated instruction with media. Some overlapping in the production of courses has occurred in the past, as when two different courses were produced for introductory psychology by TV. Although informal efforts are being made to avert that kind of duplication, multiple courses in astronomy also were in production during 1978 in California with no integrated planning or design. These only illustrate a deeper need for statewide planning for more thorough going use of media.

In 1973, a California Educational Telecommunications Committee (CETC) convened for the purpose of providing statewide liaison and communication about current educational uses of these media. Although the Committee itself has no official status, it includes directors of the consortia mentioned above and other educational media experts from each of the segments of postsecondary education. Apart from this informal committee, there is no statewide planning or coordinating among the segments of higher education with regard to development of instructional media. The members of CETC, however, do maintain active contact with one another, and most are actively involved with national developments in instructional television as well as within their own segments.

CETC is not to be confused with the Instructional Broadcast Advisory Committee (IBAC) of the California Public Broadcast Commission. Although IBAC includes some of the same persons as the CETC, it advises the Commission only on matters pertaining to stations of the Public Broadcast System in California. In contrast, CETC need not confine itself in such a way, and could readily draft long-range plans for the development of instructional materials for airing by commercial, as well as PBS stations or for nonbroadcast distribution.

The CETC is the best source of current information about instructional TV series, available or in production, acceptable to college faculties in California. There are catalogs, of course, available from several repositories for academic media; in general, these do not offer ratings or sufficient information for the reader to make qualitative judgments.

The present members of the CETC, if invited and facilitated by the California Postsecondary Education Commission could readily constitute the intersegmental body of expertise needed for planning the efficient statewide use of the kinds of instruction considered here. Starting with a set of ranked, statewide public priorities, this body could: (a) consider areas where mediated courses could meet the specified public needs; (b) point to existing courseware that could be shared for those purposes statewide; (c) estimate and compare costs of providing coordinated instruction to each target population by the various means possible; (d) plan for needed new mediated series, where possible with modular design for flexible uses; and (e) advise about opportunities for efficient multi-level uses of such series. The key concepts, in thinking about such a committee, are "intersegmental" and "statewide." As the system is now, each entity is constrained to follow a "marketing model"--find out where funds are and what will attract the largest enrollments. Armed with a set of public priorities on the other hand, an officially authorized body with a statewide public perspective could begin directly to determine what instruction would be needed next--including the media

most appropriate for the task, the materials still needing to be produced, the ways of informing each statewide target group, and so on--for a truly coordinated plan of learning for those beyond the campus and classroom, with the most cost-efficient manner for public funds. Together the CETC members have the knowledge to create and maintain a list of mediated courseware currently available and accepted by college/university departments. They would need only the authorization and funds for regular meetings to begin the planning process. Eventually such an intersegmental planning committee could be given joint powers as a conduit for funds for the needed instructional components.

The Postsecondary Education Commission considers this a promising direction and invites both public and independent segments to explore with it the convening of such an expert advisory committee for planning toward statewide development of mediated instruction beyond the campus and classroom.

SUMMARY AND CONCLUSIONS

Formal learning at several different levels above the twelfth grade is occurring in California beyond campus, often beyond classrooms, with the help of electronic instructional media. Surveys have shown overwhelming acceptance by those who utilize these modes of remote instruction. Much of this mediated instruction is demonstrably economical. This is clear and unequivocal. From a statewide perspective, however, mediated instruction is not yet evenly or equitably available to all Californians. There are great differences by geographical region; there also are differences in availability according to the level or type of instructional need. There is well organized outreach of continuing education to the work places of attorneys and physicians, for example, but no media effort to reach adults needing to improve their English reading or writing skills. Yet California has most of the needed hardware and talent with which it could fashion an equitable system of instructional help for those who cannot commute regularly to classrooms.

The chief findings of this study include the following

1. Largely through the work of consortia of colleges and universities, over 50,000 Californians enroll each year in broadcast telecourses for academic credit; well over 60,000 utilize video-and audio-cassettes for continuing professional education beyond the classroom, including attorneys and registered nurses. Increasingly, other "linkages" are providing people with formal learning opportunities in other-than-classroom modes: Instructional Television Fixed Systems (ITFS) linking

the campus with offices, learning centers, hospitals, and homes; newspaper lecture series, and radio broadcasts. While other media also are being explored, these have been used repeatedly over several years by professionals to remain competent and competitive. Furthermore, these newer modes of learning have enrolled additional thousands who would not have enrolled in regular campus classroom courses.

2. Remote mediated learning, combined with appropriate contact with live instructors and peers, can be at least as effective and significantly less costly per unit than traditional classroom lecture modes.
3. With appropriate uses of electronic media and the capacity to use tapes for repetition, "mastery learning" is more readily attainable.
4. Open broadcast is not necessarily the most efficient or effective way to distribute instruction beyond the campus/classroom. It depends on the nature of the intended audience. When it is used for undergraduates, however, polls indicate that from ten to twenty viewers tune in to the televised part of the course for every individual who enrolls for credit. Instructors and students are overcoming the "isolation" problem.
5. Public Broadcast television stations cannot be looked to for sustained or expanded broadcast of college-level instruction on a statewide basis. Only half the California stations are owned by educational institutions, and the California Public Broadcasting Commission is mandated to help only Public Broadcast stations.
6. Not all regions of California presently have significant amounts of mediated instruction at the undergraduate level. There is great inequity by geographical location in the number and types of courses available by broadcast. In most regions there is little or no postsecondary instruction in Spanish or other foreign languages.
7. There is great variation by academic field in the availability of remote instruction; teachers, engineers, physicians and attorneys presently seem to be chief beneficiaries of media for in-service education. At the college entry level, there are many attractive telecourses, but none to encourage further effort by those deficient in English and math skills for college. There is almost no remote instruction for those not fluent in English.

8. Since the senior universities and colleges (UC and CSUC) can offer mediated instruction beyond campus only via Extension, they must charge full-cost fees even for upper division courses taught by regular faculty. Community colleges, on the other hand, offer lower division telecourses for no or low fees. This very wide gap in student costs effectively prevents the senior institutions from committing themselves to developing mediated instruction for the upper division curriculum beyond the campus/classroom.
9. Public colleges/universities generally are reimbursed on the basis of enrollments and/or attendance through a portion of the course, not for completing it or mastering its content. There is no economic reward for efficiency. Budget formulae for State support to postsecondary education, on the other hand, could be devised to provide incentives for educators to find the most expeditious ways for students to achieve learning objectives, including the use of various electronic media for those beyond the campus. Such incentives do not now exist.
10. Some experience indicates that appropriate uses of electronic media for instruction--both off-campus and on-campus--can help in cutting the course drop rate. For most part-time students, the relevant unit of accomplishment is not the year or semester but the individual course. Thus, to "increase persistence" now means to increase the completion rate, course by course. More research on this is warranted.
11. One idea which nearly all practitioners in the field of instructional media greet favorably is that of a State-level conference in 1979 to give legislators and faculty leaders a current view of what is attainable in learning with proper uses and combinations of electronic media.
12. With few exceptions, colleges have selected courses for broadcast on a "marketing model" (what will attract the most new viewers to enroll) rather than a "curriculum model" (what sequences or blocks of courses will provide the most help to citizens who cannot commute to campus.) Broadcast offerings thus have an ad hoc character.
13. There is no official process or mechanism for intersegmental, statewide planning, coordinating, developing and using of remote mediated instruction in California. There is much activity of high quality in certain regions of the State, leading practitioners from all segments of education have maintained active liaison through their own informal committee, the California Educational Telecommunications Committee.

- 14 The three public segments of higher education have much hardware and talent for developing effective and efficient vehicles for enabling Californians to continue their formal education on a part-time basis. It would require relatively small amounts of support, planning, and State-level coordination for them to attain the kinds of economic and learning gains now feasible with electronic learning media.
15. An important first step toward more concerted, statewide use of available media for postsecondary instruction - especially beyond campus - could be taken by the California Postsecondary Education Commission's convening an intersegmental planning task force of experts similar to the membership of the California Educational Telecommunications Committee

FOOTNOTES

- 1/ "Remote" in related literature means "beyond campus and classroom." "Mediated" here means conveyed by an electronic medium.
- 2/ Whether at undergraduate or at graduate/professional levels, "C.I.S." is used to designate a carefully planned, tested and orchestrated set of experiences for learning, making use of various technologies and allowing for some initiative by the learner.
- 3/ Telecommunications and the Public Interest, Report of the Joint Committee on Telecommunications, California State Legislature, December 1974; pp 40f.
- 4/ KPBS Guide, August 1978.
- 5/ Telecommunications and the Public Interest, pp. 42f
- 6/ It is notable that the stated reasons for offering the course in a broadcast mode included:

 - 1) to achieve comparable instructional levels at a significantly reduced cost;
 - 2) to eliminate the backlog of students who cannot be served by existing sections;
 - 3) to provide flexible scheduling so that scheduling is eliminated as a cause for non-enrollment

(From the Project Proposal and Description)
- 7/ Curtis Karplus, "Using Videotape for Continuing Legal Education," International Bar Journal, (Gr. Brit), May 1975.
- 8/ Counting each instance of one campus offering a credit course in this ITV mode, regardless of how many campuses utilized the same broadcast series. Indeed some campuses incorporated the same broadcast series into their curriculum differently from other campuses, and under somewhat different course titles--just as a book is utilized in different courses, different ways.
- 9/ CATV services, where available, add another cost dimension to the basic capital cost of owning a TV set. Obviously CATV offers the technical feasibility for delivering instruction anywhere, we've not wanted to presume that all can afford it.

- 10/ See for instance Governor's Advisory Committee on TV: Educational TV in California - Existing Facilities, Future Needs, Plan for Development; prepared by Hammett and Edison, San Francisco; 1966.

Also Quimby and Crabbe: Telecommunications and the Public Interest--Report of the Joint Committee on Telecommunications, California State Legislature; 1974.

- 11/ Public Broadcasting and Education--a Report to the Corp. for Public Broadcasting from (CPB's) Advisory Council of National Organizations, March 1975. "With notable exceptions, education and communication have had a wary, uncomfortable relationship as superpowers of the twentieth century."
- 12/ This report does not catalog all the courses used or produced by California educators. But in general, there has been no plan by which to produce or broadcast a sequential TV curriculum.
- 13/ California media experts are looking forward, however, to a two-semester TV sequence in U.S. History, to be completed in 1979 by Dallas Community College District (Texas).
- 14/ Other instructional priorities on the CPBC list include programming on other issues: aging; environmental protection; parenting; economic literacy; cultural pluralism; and "functioning in a complex society" (political and economic participation). Some of these issues are already being addressed in part by courses available at the college introductory level in 1976-77, as well as at the level of professional training. From recommendations to CPBC, 4/8/77. This committee consists of appointees from University of California; California State University and Colleges; Coast Community College District; University of Southern California; Columbia College, Los Angeles City Schools; and San Francisco Archdiocesan Schools.
- 15/ Some respondents supplied initial enrollment figures, while others had only those from first census week. In 1976 many institutions reported enrollment aberrations due to federal changes in support for education of military veterans.
- 16/ In 1976-77, members of one consortium, for example, paid (a) basic \$1,000; plus (b) \$1,000 for every 3,000 ADA claimed by the institution; plus (c) \$2.00 per SCU attempted by telecourses in that institution.
- 17/ The student bears the major cost of transportation, a substantial factor in computing financial aid for community

college students For ITV, the student contributes "private capital" in his/her own TV receiver.

- 18/ When CSU-Chico with the Northeast California Council (consortium) offered a credit course utilizing the famed TV series, "Roots," only 19 people paid and completed the university's requirements for the credit. But a single Community College had 56 enroll and 51 complete this for a lower division course. Some have argued strongly for more funds for "marketing"--recruiting the target audiences. The problem of fee-differential remains as a major obstacle, nevertheless.
- 19/ CSUC funds regularly budgeted for "Audiovisual Services"--approximate \$8 million annually--provide instructional services to the on-campus departments. They have little to do with broadcast instruction or cassettes for distribution off-campus, except as "maintenance" of the considerable talents and equipment which could provide the remote instructional material with proper support.

APPENDICES

(SOURCE: Telecommunications and the Public Interest, Joint Committee on Telecommunications, Calif. State Legislature, December 1974.)

TRANSLATOR STATIONS

REPEATING PUBLIC TELEVISION STATIONS

A. Areas receiving KIXE, Redding, via translators.

<u>Area</u>	<u>County</u>
Alturas	Modoc
Alturas-Canby	Modoc
Big Bend-Bush Bar	Shasta
Cedarville-Eagleview-Lake City	Modoc
Chester-Greenville-Susanville-Westwood	Lassen-Plumas
Fort Bidwell-Lake City	Modoc
Litchfield-Susanville	Lassen
Shasta Valley-Yreka	Siskiyou
Tule Lake-Newell	Siskiyou-Modoc
Weed	Siskiyou
Etna-Fort Jones	Siskiyou
Weaverville	Trinity
Hayfork	Trinity

B. Areas receiving KVIE, Sacramento, via translators.

<u>Area</u>	<u>County</u>
Bridgeport-Lee Vining	Mono
Conway Summit-Mammoth School	Mono
Fern Creek-June Lake	Mono
South Lake Tahoe	El Dorado

C. Areas receiving KQED, San Francisco, via translators.

<u>Area</u>	<u>County</u>
Arcamas	Monterey
Bass Lake-North Fork	Madera
Big Sur	Monterey
Bradley-San Ardo	Monterey
Gonzales	Monterey
Hollister-San Juan Bautista	Monterey
Ukiah	Mendocino
Mt. Bullion-Mariposa	Mariposa
Salinas-Castroville-Seaside-Pacific Grove-	
Marina-Moss Landing-Prunedale	Monterey
Oakhurst	Madera
Fresno	Fresno

D. Areas receiving KTEH, San Jose, via translators.

<u>Area</u>	<u>County</u>
Bradley-San Ardo	Monterey
Gilroy-Morgan Hill	Santa Clara
Gonzales-Soledad-Greenfield	Monterey
Hollister	San Benito
Salinas-Monterey	Monterey

E. Areas receiving KCET, Los Angeles, via translators.

<u>Area</u>	<u>County</u>
China Lake-Ridgecrest	Kern

F. Areas receiving KVCR, San Bernardino, via translators.

<u>Area</u>	<u>County</u>
Big Bear Lake-Lake Arrowhead-Crestline	San Bernardino
Riverside-Rubidoux-La Sierra-Coloma	Riverside
Victorville	San Bernardino

APPENDIX B

ILLUSTRATION OF COSTS FOR TWO COMPARABLE COURSES

In the report, the Fourth Revolution written by Sir Eric Ashby for the Carnegie Commission on Higher Education (1972), the author points out that illustrations of costs in the instructional uses of electronic media are likely to remain just that--illustrations. It is difficult to generalize from one case to another.

In efforts to standardize patterns of media utilization for purposes of comparison, writers on the subject of costs have been forced to employ hypothetical models with built-in assumptions that may not be realized in actual use. Examples include hypothetical community sizes or technology use in some arbitrarily assumed fraction of total instruction time. In the absence of solid cost data based on actual experience there is no alternative to this approach, but its deficiencies should be recognized by those who use the results in making policy. (Page 82)

Even with "solid cost data based on actual experience" one cannot generalize much about instructional media costs without knowing (a) what specific combinations of media are to be used and (b) what level of complexity is to characterize the software produced for a course. When costs of a "media" course are projected for various enrollment figures, nevertheless, and then compared with cost projections of a comparable course taught entirely in the classroom mode, the two curves always assume the same kind of contrast on the graph. Beyond a certain threshold of enrollment--often surprisingly low in itself--the "media course" cost per student plummets downward

very abruptly before beginning to level off. The curve for the classroom course shows a slight decrease in cost as enrollments increase, but even that decline in cost dissipates and levels as class sections increase. While not surprising, it is the contrasting shapes of the graphs in the following illustration, more than specific values at each point, which are most significant.

Assumptions

This illustration and analysis assumes, first, the continued existence of campuses, on-campus facilities and on-campus staffs. It considers the costs of telecourses as grafted onto those of an existing, campus-intensive educational establishment. It further is assumed that enrollments in any given telecourse would supplant only a portion--not more than half--of the total number of sections enrolled at a campus in that particular subject. There still would be an on-campus, all-classroom alternative.

Further Assumptions

1. The term "ITV course" as used here means a coordinated instructional system with broadcast TV as a major medium of instruction but by no means the sole medium. In every case, this discussion

assumes printed study material and an active teaching involvement of live faculty members with students, often interacting on a one-to-one ratio. An ITV course need not include as many as 30-45 programs, but usually does in current practice. It includes some classroom meetings

2. We cannot compute the spillover benefits of broadcasting instruction to the nonenrolled, noncredit audience. To individual listeners, to sponsoring institutions, and to society at large these values probably are substantial. The following computations charge the entire cost of ITV against only those who enroll in such courses for credit. In other words, an average "cost per SCH" assumes zero value for zero credit hours regardless of what benefits the larger viewing audience may derive from instructional broadcasts, or what public relations value may accrue to the institutions.
3. We make no attempt to compute the spin-off values of videotaped modules for instructional use on the campus. Obviously the value of broadcast instruction increases substantially when it can be replayed often on campus, as in a learning center. Indeed such an accrual of value can occur in reverse. videotaped modules funded and produced first for on-campus use may extend their usefulness if made part of a series for open-circuit broadcast. Such "joint product" values are not taken into account here, however

4. We assume that the on-campus student and the ITV student require, on the average, equivalent expenditure of public funds for indirect operating costs--overhead and administrative services. The one may "consume" more library resources while the other may require more academic counseling, but it seems widely agreed that such indirect costs come out roughly the same. This key assumption permits us to compare only direct instructional and departmental support costs when comparing ITV with other modes of instruction. (Acquiring ITV software and broadcasting counts as part of direct instructional costs.)
5. To that must be added capital costs, generally much lower for broadcast ITV than for conventional instruction. An ITV class meets face-to-face from four to twelve times per semester compared with some 48 class meetings for a conventional three-credit course. Often the former occur during slack use periods, e.g., Saturday, and then not always on campus. Since there are no precise data reflecting actual experience, we shall assume that the student in an ITV course requires no more than 10 percent of the classroom and parking space normally allotted to the average enrollee.
6. The purchase price of air time accounts adequately for costs of broadcasting except for time donated under FCC rules. We are not obliged to assume that operating or maintaining a TV

station/studio is a necessary concomitant cost of supporting ITV.

7. Finally, the institution's annual membership "dues" to take part in the consortium account for this institution's entire expenditure for acquiring and airing the video component except for taped copies for its library.

To identify the specific components of the costs of ITV and classroom instruction so as to compare their cost per unit, we studied paired courses within the same academic division of a Community College. We chose two metro-area institutions with moderate-level faculty salaries. The illustration first shows the average direct instruction and support (I&S) costs for a classroom course in the Humanities Division at "College B." It then shows, in contrast, direct costs of an ITV-based course in the same division, a course in Philosophy.

Both costs curves project average cost per student credit hour for varying enrollments.

Regardless of how it obtains the materials for broadcast, in offering a CIS course with a TV broadcast component the consortium and/or the sponsoring institutions incur the following kinds of costs (see Figure 1 and 1-a):

1. software: obtaining or creating the taped programs and printed materials, maintaining, duplicating and circulating them;
2. air time: getting them broadcast (although in a few cases, such as NYU's "Sunrise Semester" series, the software and air time are provided free except for the printed materials); scheduling them for appropriate target groups;
3. faculty contact/instruction examining, counseling, generally providing individual attention;
4. indirect operating and support by credit-granting institution.

AVERAGE COSTS PER STUDENT CREDIT HOUR FOR CLASSROOM COURSE
IN HUMANITIES DIVISION, COMMUNITY COLLEGE "B"
(1973-74)

1. Budgeted for 1973-74 (2 sem.) for Division \$315,536.00
2. Budgeted for 1973-74 (2 sem.): 19.2 positions
3. Total credit hours, 14th week, census: 9,461 SCH
(sum of Fall and Spring sem.)
4. Current SCH product per (1.0) position (fac.): 493 SCH
--for comput'n count = 500 SCH
16,434.00
5. Weighted average salary per (1.0) faculty positions 15,700.00
(Derived by deducting from total cost/salaries
1 Chairman salary, \$25,000
+1 Clerical salary, 8,000
and dividing by 18 positions;
supplies in this division were negligible.)
6. At College "B," 3 SCH in Philosophy Dept. = 1 enrollment.
7. Thus 500 SCH = 167 enrollment = 1 FTE faculty load
over 2 semesters, 5 sections per semester.
8. Thus, 1 section has average enrollment of 16.7 people
(14th week).
9. Average cost per SCH at current enrollment level . . . 34.00
10. Average cost per enrollee (3 sem. credit hours) 102.00

Formula for Projecting Direct I & S Costs per SCH (see graph)
with Varying Enrollment

If 1 FTE Faculty position = \$15,700 per 500 SCH (Curr. ave. for Division),

let C = number of SCH in all courses,
X = cost per SCH in average division course
250 SCH = teaching load of chairman,

$$\text{then } X = \left[\frac{(C-250)}{500} \cdot \$15,700 \right] + \$33,000$$

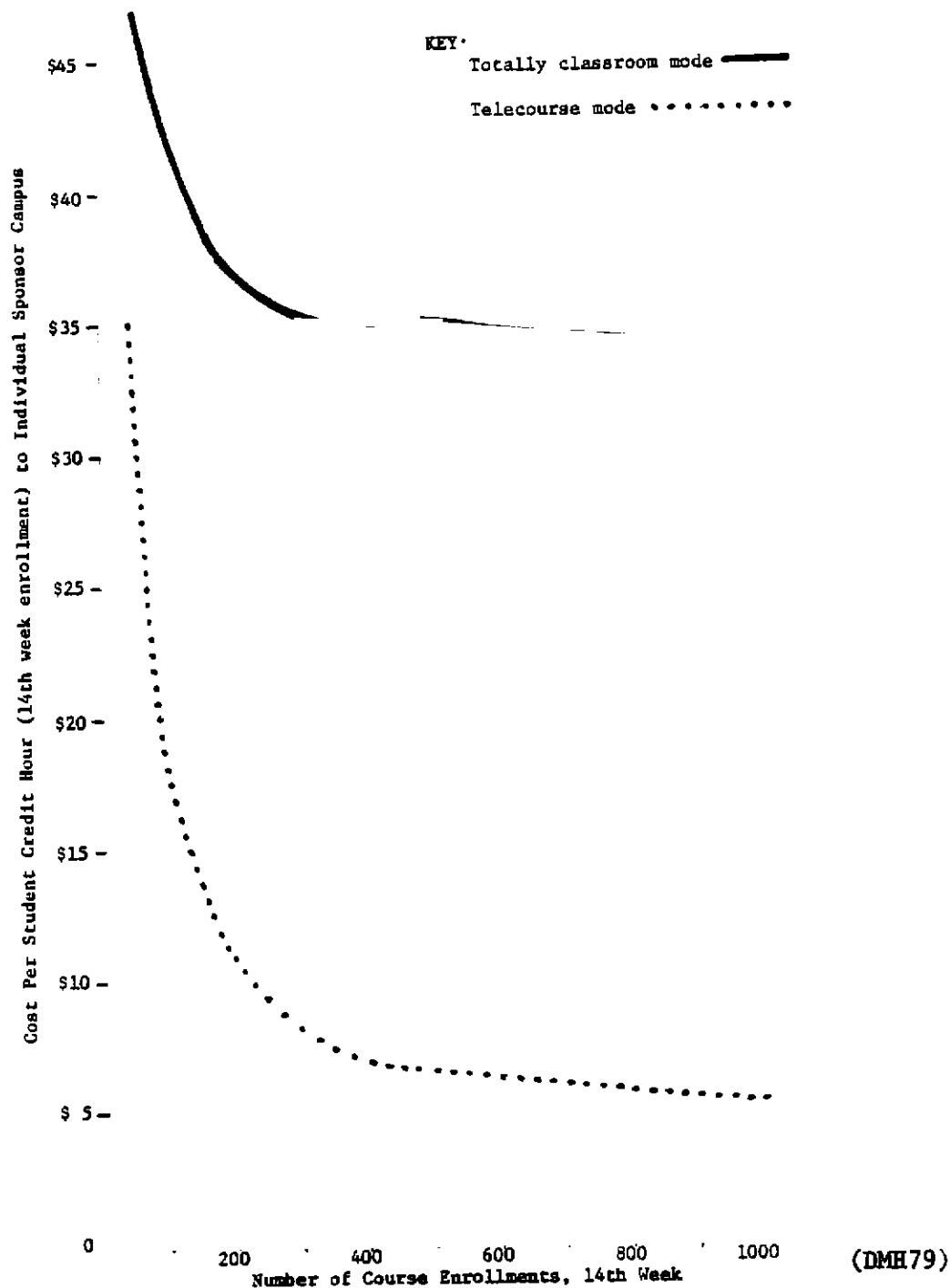
AVERAGE COSTS PER STUDENT CREDIT HOUR, TELE-COURSE
IN HUMANITIES DIVISION, COMMUNITY COLLEGE "B"
(1973-74)

1.	Dues to ITV Consortium for academic year--College "B" (Pays for tape rental, broadcasting, promotional mat'ls., etc.)	\$5,264.00
2.	Consortium dues (line 1) per course series actually broadcast and used for credit enrollment during AY 1973-74 (8 courses)	658.00
3.	On-campus instructor (1/5 workload, 1 sem.)	1,600.00 ^{a/}
4.	Instructional support (estim. by Division sec'y.)	300.00
5.	Total, Instructional and Direct Support costs per course per campus	<hr/> \$2,618.00
6.	Enrollment in ITV course, College "B" credit (final census count)	80
7.	Total SCH in ITV course, College "B" credit	240
8.	<u>Cost per SCH, actual enrollment, ITV Humanities course 1974 at Community College "B"</u>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">\$10.90</div>
9.	<u>Cost per enrollee (3 sem. credit hours) when enrollment at final census = 80</u>	<div style="border: 1px solid black; padding: 2px; display: inline-block;">32.72</div>

To project unit costs for varying enrollments, add to campus cost 1/10 instructor's salary per 250 enrollment increment.

a/ Actual cost per campus was much less, since only 1 instructor per course was available per three sponsor campuses; but that practice probably does not accord strictly with the statutory requirement. In the example chosen here, the different salary level from classroom instructor is deliberate.

PROJECTIONS OF DIRECT COST PER STUDENT CREDIT HOUR^{a/}
 FOR TELECOURSE IN PHILOSOPHY AND FOR HUMANITIES COURSE
 OFFERED TOTALLY IN CLASSROOM MODE AT "COLLEGE B,"
 1973-74



^{a/} See accompanying text for computations and assumptions. Both courses, from whose actual costs the above projections were made for varying enrollments, were "3-unit" courses in the same division of "College B." Note that enrollment figures are those for near the end of the semester, so as more nearly to indicate cost per "outcome" or "product" unit.

APPENDIX C

MEMBERS OF THE CALIFORNIA EDUCATIONAL TELECOMMUNICATIONS COMMITTEE WHO SERVED AS TECHNICAL ADVISORY COMMITTEE TO THIS (CPEC) STUDY

Mrs. Sally Beaty, Director
Southern California Consortium
for Community College TV
Los Angeles

Dr. Martin Chamberlain, Dean
University Extension
The University of California
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Dr. Stuart Cooney, Director
California ITV Consortium

Mr. Hal Enger, Coordinator
San Diego TV College

Mr. David Green, Director
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San Diego

Dr. George Willey, Director
Bay Area Community College TV
Consortium
Palo Alto

Dean Robert Wyman
(Chair, CETC Advisory Committee)
American River College
Sacramento

APPENDIX D

1978-79 PROJECTS AND STUDIES IN ADULT LEARNING AND TELEVISION (Source: Corporation for Public Broadcasting)

Sponsoring Agency	Title/Description
A. Operational Projects	
1. Corporation for Public Broadcasting (CPB)	Station-College Executive Project in Adult Learning. Designed to increase the number of stations broadcasting adult learning series and the number of colleges offering credit for those series. Will conduct a series of workshops for teams of station executives and college administrators.
2. Public Broadcasting Service (PBS)	Adult Learner Task Force. Intended to recommend appropriate mechanisms to assure systematic availability of adult learner series through the public broadcasting system.
3. Central Educational Network (CEN)	Council on Adult Learning. Currently in its formative stages, this Council is envisioned as paralleling the K-12 Council, including representatives from each of the states in the CEN region.
4. American Association of Community and Junior Colleges (AACJC)	Mass Media Task Force. Group composed primarily of two-year colleges which produce telecourses. Purpose is to work cooperatively to increase the use of telecourses and to avoid duplication in production efforts.
5. American Association of Community and Junior Colleges	Telecourse Utilization Project. Under a grant from FIPSE, AACJC will hold an Assembly of approximately fifty two-year college personnel and TV broadcasters to examine policy issues which relate to the offering of broadcast telecourse by two-year colleges.

- | | |
|--|---|
| 6. College Producers
(UMA, Coast, Dallas) | User Orientation Workshops. A series of three regional (West, Midwest, East) workshops planned for February 1979, to acquaint potential users with available telecourses and how they might be used. |
| 7. Public Broadcasting Service (PBS) | University Licensee Committee. Group established to study problems related to the administration and management of university licensees. Meeting planned for February 1979. |
| 8. Eastern Educational Television Network (EEN) | Planning a survey of member stations which will help determine future directions for adult learner services of the network. |
| 9. Other projects of a less than national nature | <p>The San Francisco Diocesan Network with funding from FIPSE, is initiating a project (Senior University of the Bay Area - SUBA) to aggregate senior citizen audiences around adult learner series.</p> <p>The Maryland Center for Public Broadcasting is proposing a formal adult learner service (Intergalactica University) modeled after the British Open University system.</p> |

B. Studies

- | | |
|--|---|
| 1. Corporation for Public Broadcasting (CPB) | Higher Education Utilization Study (HEUS). Currently in the feasibility study phase and planned for implementation in 1980. This will be the first comprehensive nationwide study of the availability and use of TV and radio for instruction at the higher education level (approximately 3,000 institutions of higher education). |
|--|---|

- | | | |
|----|--|---|
| 2 | National Association of State Universities and Land-Grant Colleges (NASULGC)/American Association of State Colleges and Universities (AASCU) | Membership Survey. Each of these organizations will be surveying its membership institutions (approximately 150 and 300 respectively) this winter to determine which institutions have and use television facilities. |
| 3. | American Association of Community and Junior Colleges (AACJC) | Membership Survey. Designed to determine which of the 1,200 two-year colleges are using television for instruction and some of the reasons why and why not. |

Published reports:

Carnegie Commission on the Future of Public Broadcasting: A Public Trust; Bantam Books, New York; 1979 (February).

Roger Yarrington (ed.): Using Mass Media for Learning; American Association of Community and Junior Colleges, Washington D.C.; 1979.

Division of Educational Planning and Development: Instructional Television Evaluation Report, 1977-1978; Los Angeles Community Colleges, August 1978.

Telecommunications and the Public Interest, the Report of the Joint Committee on Telecommunications, California State Legislature; December 1974.

Office of Special Services Evaluation of the English 101 Tele-course, Writing for a Reason; Dallas County Community College District (Dallas, Texas), October 1976.

Pages of Tape -

1, 23, 24, 25 30,

33, 36, 46, 47,

B 7, B-8, B-9

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INTRODUCTION

A human being should not be wasted in doing what forty sheets of paper or two phonographs can do. Just because personal teaching is precious and can do what books and apparatus cannot, it should be saved for its peculiar work. (Edward L. Thorndike, 1912)

With the vast repertoire of communications media available, it is high time instruction became more productive. If, as seems clear, some of the functions performed by human beings can be performed as well or better through other agencies, teachers could assume more versatile, differentiated, human roles in the schools. (Sidney Tickton, 1970)

For at least twenty years, Californians have talked about utilizing electronic communication media to bring instruction to the people rather than the other way around. Meanwhile, vast expenditures of public funds provided conventional classrooms within commuting distance of most Californians. Uses of electronic media tended to remain confined within this conventional pattern of classrooms and campuses. Since 1970, however, significant developments have revived thoughtful inquiry, at the State-policy level, about more concerted use of modern media for postsecondary instruction beyond the campus. These developments include.

- 1 Demand by taxpayers for more efficient use of public resources;
2. Emergence of multi-campus consortia and their experience in offering televised courses economically;
- 3 Growing sophistication in using media for coordinated instruction at adult levels;
- 4 Technical improvements in electronic communication media;
- 5 Increased requirements for continued learning and/or credit for maintaining professional standing;
6. A steady trend among Californians toward studying part-time and at different stages of adult life; and
7. A new awareness of our limited energy resources.

In view of such significant changes, the Legislature, in 1976 (AB 4325), directed the Commission to study, among other aspects of

TABLE IV.

**Courses with Broadcast Television Series Offered
for Undergraduate Credit in California,
Fall 1976 - Spring 1977**

TV Title/Course Title; Academic Discipline	No. & Length of Programs	Term		Consortium (see Table I)	Indiv. Colleges	No. Spons. Instit.	Enrollment	
		F '76	Sp '77				Inst.	Avg. per campus
1. "Real Estate and You" ["Consumer Real Estate"] (Real Estate)	30 30 min	x		So Cal BA VA		60	7,972	132.9
2. "Law for the '70s" (Business)	50 30 min	x	x	So. Cal SB VA		44	5,506	125.1
3. "A Time to Grow" ["Human Development"] (Psychology)	45 30 min	x	x	So. Cal SD		37	5,454	147.4
4. "It's Everybody's Business" ["Introduction to Business"] (Business)	30 30 min	x	x	So. Cal. SD BA		56	4,615	82.4
5. "From Clunk to Clunk" ["Music, Appreciation"] (Music)	45 30 min	x	x	So Cal BA VA		54	3,992	74.0
6. "Adams Chronicles" (History)	13 60 min	x		So. Cal. SD BA VA		57	3,791	66.5
7. "Search, Quest for Personal Meaning" (Philosophy/Humanities)	45 30 min	x	x	So. Cal		30	1,649	121.6

19 Title/Course Title; Academic Discipline	No. & Length of Programs	Term F '76 Sp '77	Consortium (see Table 1)	Indiv. College	No. Spone. Instit.	Enrollments: Init. Avg. per campus
8. "Food for the Modern Family" (Home Economics)	45 30 min	x	So Cal.		29	3,483 120 1
9 "Classic Theatre" (Drama)	13 90 min	x	So. Cal.		56	2,849 50 8
		x	SD			
		x	BA			
		x	VA			
10 "Dimensions in Cultures" (Anthropology)	30 30 min	x	So. Cal.		29	2,709 93 4
11. "History of Art" (Prof. Lennox Torrey)	45 30 min	x	BA		19	1,475 77 6
12 "Rising Things Grow" (Agriculture)	30 30 min	x	VA		8	951 318 9
13 "The Home Gardener" (Agriculture)	16 30 min	x	VA		8	
		x	Cent Val.		6	780 52 0
		x	→ Coasline		1	
14. "Clothing Construction" ["Cannic's Clothing Corner"] (Home Economics)	30 30 min	x	BA		16	562 35 1
15. "Consumer Nutrition" (Home Economics)	36 30 min	x	VA		6	553 92 1
16. "Values and Morality in School" (Education)	12 30 min	x	→ LaVerne + 9 CSU		10	380 38.0
17 "Real Estate Principles" (Real Estate/Business)	45 30 min	x	SD		5	306 61 2

TV Title/Course Title/ Academic Discipline	No. & Length of Programs	Term		Consortium (see Table 1)	Indiv. Colleges	No. Spons. Instit.	Enrollment	
		F '76	Sp '77				Init.	Avg. per campus
18. "Introduction to Property Management" (Real Estate/Business)	45 30 min		x	SD		5	303	60.6
19. "Course of Our Times, Part II" (Social Science)	36 30 min	x		SD		6	192	32.0
20. "Physical Geography" (Geography)	45 30 min	x		SD		4	156	39.0
21. "Anyone for Tennyson?" (English Literature)	16 30 min	x		SD		4	88	22.0
22. "Biosphere and Biosurvival" (Biology/Ecology)	28 30 min		x	SD		4	70	17.5
23. "As Man Behaves" (Psychology)	30 30 min	x		--	College of San Mateo	1	64	64.0
24. "Craft of the Article" (English)	16 45 min	x		--	College of San Mateo	1	52	52.0
25. "Basic Ground School--Pilots" (Aeronautics)	45 45 min	x		--	College of San Mateo	1	24	24.0
26. "Making It Count" (Computer)	20 30 min			--		1		
27. "Wheels, Kites and Clay" (Art)	40 30 min	x		--	USC	1		
28. "Open Math" (Math)	15 30 min	x		--	Pacific College	1		
29. "Cuten Tug" (German II)	17 30 min	x	x	--	CSU, Sac'to	1		
30. "Family Finances" (Business)	15 30 min	x		--	Pasano St.	1		
31. "Roots-Afro American Connection" (History)		x		CSUC		13	1,426	109.0
TOTAL						575	51,402	

granted specifically for design/preparation/production/re-editing of modular instruction in subjects that typically have massive enrollments statewide. Several portions could be designed to motivate, via broadcast, those who have not had a satisfying experience with previous modes of "schooling" but could benefit from further structured learning. Other portions could be designed for heavy re-use (on video-cassettes), including selective assignments for individual needs of students.

Proposals for the design and production of such materials should require the participation of experts from more than one segment of higher education in California; this encourages subsequent participation and use by more than one segment. Apparently, what is most needed for this to occur are start-up funds for the design and planning phases. Since wide use and out-of-state rental are common for well-produced California telecourses, some State support could well take the form of a revolving fund. On the other hand, the telecourse broadcast format must not be counted on for all learning tasks beyond campus. Each distinct task requires separate consideration by experts in coordinated learning and media.

The Commission suggests that the Legislature explore the creation of a renewable fund of modest size--somewhat less than one million dollars--for intersegmental planning, design, production (or acquisition) and evaluation of instructional media materials in subjects necessary for college entry and persistence. Such materials should be planned for varied uses, e.g., modules for motivating those in need of entry-level skills, as well as for repetitive drill sessions under supervision. The broadcast telecourse should by no means be regarded, in using the fund, as the only or even the primary means of outreach. The ultimate object and use of the fund should be, however, to provide effective and economical learning alternatives for those adults beyond the campus and, for the most part, beyond classrooms, and to provide these alternatives systematically across the State to facilitate college entry and persistence. Through a joint powers agreement an intersegmental committee (not a new agency) could be authorized to receive and disburse such funds, in the form of both grants and loans, for such specified purposes. (Other academic levels will be treated later in this report.)

Response and Effectiveness

Some fifty-thousand enrollees responded to thirty telecast courses for lower division (Community College) credit in California over the two semesters of 1976-77 (this does not include summer). This was approximately double the enrollment in 1973-74, but considerably below the total in 1974-75 (approximately seventy thousand). 15/

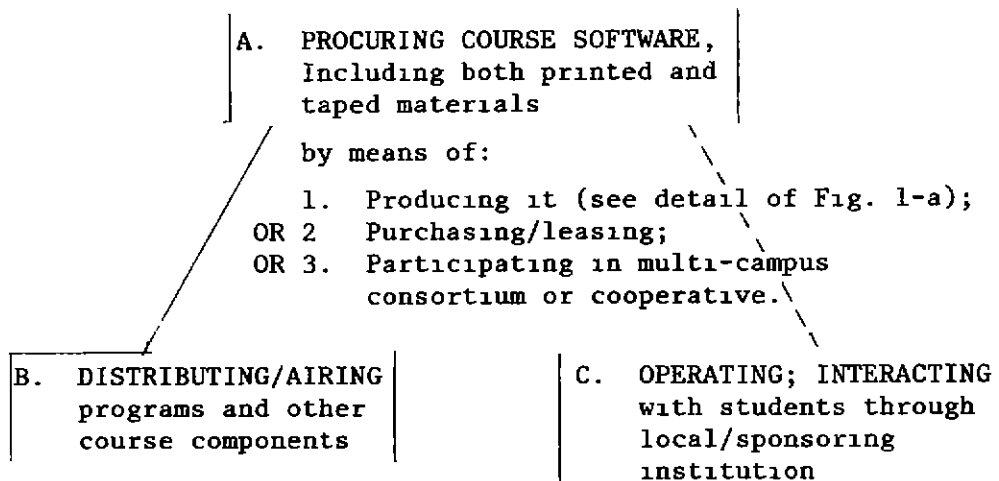
TABLE IV-b

Persistence Rates in Selected ITV Courses
Offered by Community Colleges,
Fall 1976 and Spring 1977¹.

Course/Series Title	No. colleges included in tally	Initial <u>enrollment</u>	No. students completing	Persistence rate (%)
1. Adams Chronicles	14	956	463	47
2. Foods for the Modern Family	15	1,649	863	52
3. Law for the Seventies	15	1,672	836	50
4. Freehand Sketching	6	644	412	64
5. Home Gardener	6	743	495	67
6. Family Risk Management (Consumer Insurance) (Fall 1975)	6	743	551	74

1. See narrative, pp. ____, for proper context. The number of course "completions" (students receiving any grade other than "W") divided by "highest initial enrollment available" produces "persistence rate" for this table. Colleges included in these tallies reported informally and do not comprise a "scientific sampling" of colleges statewide. They do represent a wide variety of communities, however---urban and rural, wealthy and poor, etc.

Fig. 1: COST CATEGORIES IN OFFERING INSTRUCTIONAL TELEVISION COURSE
BEYOND CAMPUS



Explanatory note on Figure 1 and 1-a

Regardless of how an educational institution obtains and uses broadcast instruction, it must plan and design its own use of:

- (A) "Software"--taped programs, printed textbooks and study guides, examinations (if printed), circulating and duplicating these;
- (B-7) "Air time"--getting programs broadcast, or obtaining advance information if they are network/station provided; informing target audience/enrollment (as in case of specific profession),
- (C-9) Student/Faculty contact and interaction--person-to-person instruction, mentoring, tutoring, examining, grading, and other individual attention,
- (B-8& C-11) "Promotion"--informing the appropriate segments of the public about the availability of the course;
- (C-11) "Direct administration/support"--registering, recording grades, ordering textbooks, maintaining library, records, etc.

Most colleges/universities pay others to perform one or more of these functions. Frequently, a multi-institutional group or consortium receives external grants, in addition to membership "dues," toward the production of a new instructional series, which a single institution ordinarily would not receive. Although such grants are certainly of interest and pertinent to the subject of "cost," they are not specifically taken account of here because they are not part of the public support costs, any more than donations of private gifts to a public school. Local faculty participate in selection and/or production-design processes, usually by specific contractual agreements, and sometimes take part on-camera

Therefore, it would seem reasonable if the State were to subsidize upper division extension courses whose credits are applicable toward a degree, just as it subsidizes regular upper division instruction.

Option 2.

Extension courses at the upper division credit level, when approved and taught by regular departmental faculty, deserve transfer value, even when they have to do with one's academic major. (Otherwise, why would the faculty approve them for extension credit?) Courses of this nature offered by remote instruction (e g., video, audio, teleconferencing), where credits can be transferred into the student's degree program, deserve to be subsidized to the same extent as the courses offered in the more traditional classroom mode and to apply toward the "residency" requirements.

Option 3.

In order to encourage use of the most efficient combinations of media, including remote instruction, for various fields of learning, the State could reimburse university extension for completed credits earned via remote, individualized or self-paced instruction in credit courses (bachelor's).

University administrators have expressed the need, in recent years, to make better use of the new strengths of educational technology including electronic media Alex Sherriffs, Academic Vice Chancellor of the State University segment, has said, for instance.

Evidence of our interest in instructional development and in alternative delivery systems is the formation of a Division of Learning Services Development . . . (with) Instructional Technology component . . . within the Chancellor's Office This action marked the end of a period during which too little systemwide attention had been given to educational media.

Many of the myths and fears of the unknown concerning technology are at last beginning to diminish. Attacks such as . . . claiming that it is carried out by impersonal and demonic machines, or that it will lead to faculty unemployment are becoming less frantic . . . It is becoming understood that if we deny television, computers and a score of other resources, we deny highly effective ways of teaching and learning Especially as we face economic and productivity problems . . . we must modify our modes of presentation and bring up to date our understanding of the learning and teaching process

(Address to State University Media Personnel, December 1976)

Furthermore, the State University Trustees adopted in 1978 a new policy strengthening the intercampus planning and development of instructional media. (The previous policy statement in this regard was written in 1956) Within the University of California generally, the Extension Division at the San Diego campus has shown the most consistent activity in offering courses by means of electronic media beyond the campus and classroom. The Regents themselves recently took a notable step forward in signing a contract with the British Broadcasting Company (BBC) to develop jointly a telecourse on Astronomy (1977).

It may well be that upper-division teaching/learning cannot utilize open broadcast media as frequently as do other levels. Upper-division courses may more often require more group interaction, more immediate give-and-take, such as ITFS makes possible. (See "Instructional Television Fixed Service," pg. 5). Or it may be precisely at this level where the student can benefit most from encounters with the great scholars--the Bronowskis and the Leakeys and the Galbraiths, for instance--in his or her chosen major field, if those are not personally present at the "home campus." Also from a statewide perspective, much standard information--in the sense that there are standard textbooks in major fields--could be presented through some electronic medium, thus allowing the local instructor more individualized use of the student contact hour. In any case, there is virtually no State-supported way at present by which a house-bound or office-bound person can complete a baccalaureate degree through remote instruction, except by correspondence. ("Off Campus" degree programs are almost all conducted in off campus classrooms.) External degree and certificate programs still largely require commuting to classrooms.

If the public universities are to have meaningful opportunities to reach Californians beyond campus especially at the undergraduate level, some reasonable way must be devised to allow and encourage their best faculty working with Extension Divisions to do so with their media capabilities. The idea of State support for upper-division transferrable credit earned via Extension's remote instructional capability seems worthy of serious exploration--especially if a statewide cost savings (per unit of instruction) could be realized.

As a major part of that remote instructional capability, the California Consortium for ITV has received its budgeted State University's support only from the "Continuing Education Revenue Fund" (extension fee-generated), and has raised the rest itself in the form of outside grants for production of video series, sales of study guides, etc. 19/

AVERAGE COSTS PER STUDENT CREDIT HOUR FOR CLASSROOM COURSE
IN HUMANITIES DIVISION, COMMUNITY COLLEGE "B"
(1973-74)

1. Budgeted for 1973-74 (2 sem.) for Division \$315,536.00
2. Budgeted for 1973-74 (2 sem.): 19.2 positions
3. Total credit hours, 14th week, census: 9,461 SCH
(sum of Fall and Spring sem.)
4. Current SCH product per (1.0) position (fac.): 493 SCH
--for comput'n count = 500 SCH
16,434.00
5. Weighted average salary per (1.0) faculty positions 15,700.00
(Derived by deducting from total cost/salaries
1 Chairman salary, \$25,000
+1 Clerical salary, 8,000
and dividing by 18 positions;
supplies in this division were negligible.)
6. At College "B," 3 SCH in Philosophy Dept. = 1 enrollment.
7. Thus 500 SCH = 167 enrollment = 1 FTE faculty load
over 2 semesters, 5 sections per semester.
8. Thus, 1 section has average enrollment of 16.7 people
(14th week).
9. Average cost per SCH at current enrollment level . . . 34.00
10. Average cost per enrollee (3 sem. credit hours) 102.00

Formula for Projecting Direct I & S Costs per SCH (see graph)
with Varying Enrollment

If 1 FTE Faculty position = \$15,700 per 500 SCH (Curr. ave. for Division),

let C = number of SCH in all courses,
X = cost per SCH in average division course
250 SCH = teaching load of chairman,

$$\text{then } X = \left[\frac{(C-250)}{500} \cdot \$15,700 \right] + \$33,000$$

C

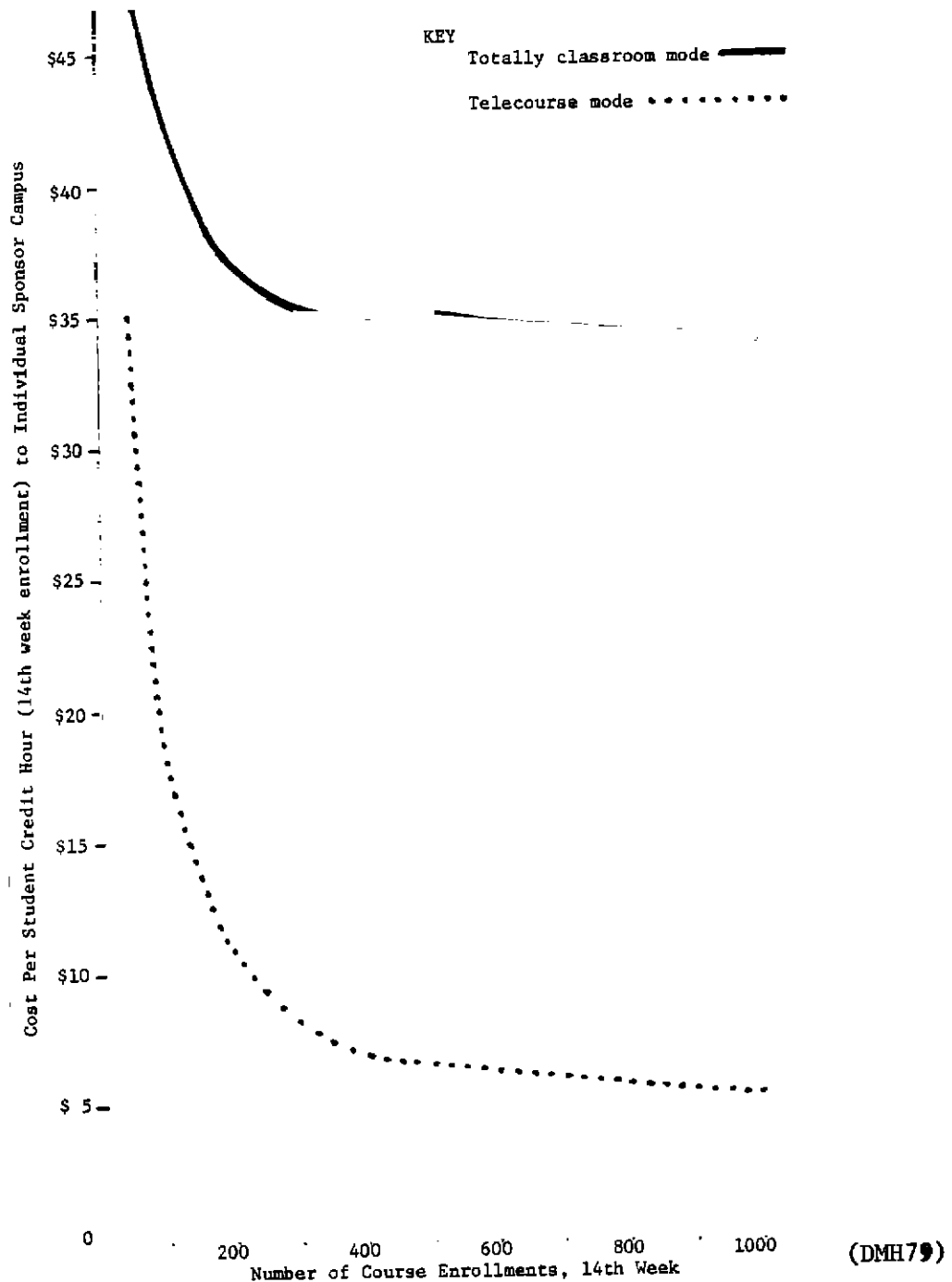
AVERAGE COSTS PER STUDENT CREDIT HOUR, TELE-COURSE
IN HUMANITIES DIVISION, COMMUNITY COLLEGE "B"
(1973-74)

1.	Dues to ITV Consortium for academic year--College "B" (Pays for tape rental, broadcasting, promotional mat'ls., etc.)	\$5,264.00
2.	Consortium dues (line 1) per course series actually broadcast and used for credit enrollment during AY 1973-74 (8 courses)	658.00
3.	On-campus instructor (1/5 workload, 1 sem.)	1,600.00 ^{a/}
4.	Instructional support (estim. by Division sec'y.)	300.00
5.	Total, Instructional and Direct Support costs per course per campus	<hr/> \$2,618.00
6.	Enrollment in ITV course, College "B" credit (final census count)	80
7.	Total SCH in ITV course, College "B" credit	240
8.	<u>Cost per SCH, actual enrollment, ITV Humanities</u> <u>course 1974 at Community College "B"</u>	<div style="border: 1px solid black; padding: 2px; text-align: center;">\$10.90</div>
9.	<u>Cost per enrollee (3 sem. credit hours)</u> <u>when enrollment at final census = 80</u>	<div style="border: 1px solid black; padding: 2px; text-align: center;">32.72</div>

To project unit costs for varying enrollments, add to campus cost 1/10 instructor's salary per 250 enrollment increment.

a/ Actual cost per campus was much less, since only 1 instructor per course was available per three sponsor campuses; but that practice probably does not accord strictly with the statutory requirement. In the example chosen here, the different salary level from classroom instructor is deliberate.

PROJECTIONS OF DIRECT COST PER STUDENT CREDIT HOUR^{a/}
 FOR TELECOURSE IN PHILOSOPHY AND FOR HUMANITIES COURSE
 OFFERED TOTALLY IN CLASSROOM MODE AT "COLLEGE B,"
 1973-74



^{a/} See accompanying text for computations and assumptions. Both courses, from whose actual costs the above projections were made for varying enrollments, were "3-unit" courses in the same division of "College B." Note that enrollment figures are those for near the end of the semester, so as more nearly to indicate cost per "outcome" or "product" unit.